# HYGEIA

## THE HEALTH MAGAZINE

*Published by the American Medical Association*

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*The Shoe of Tomorrow* — *Mental Health Slogans*

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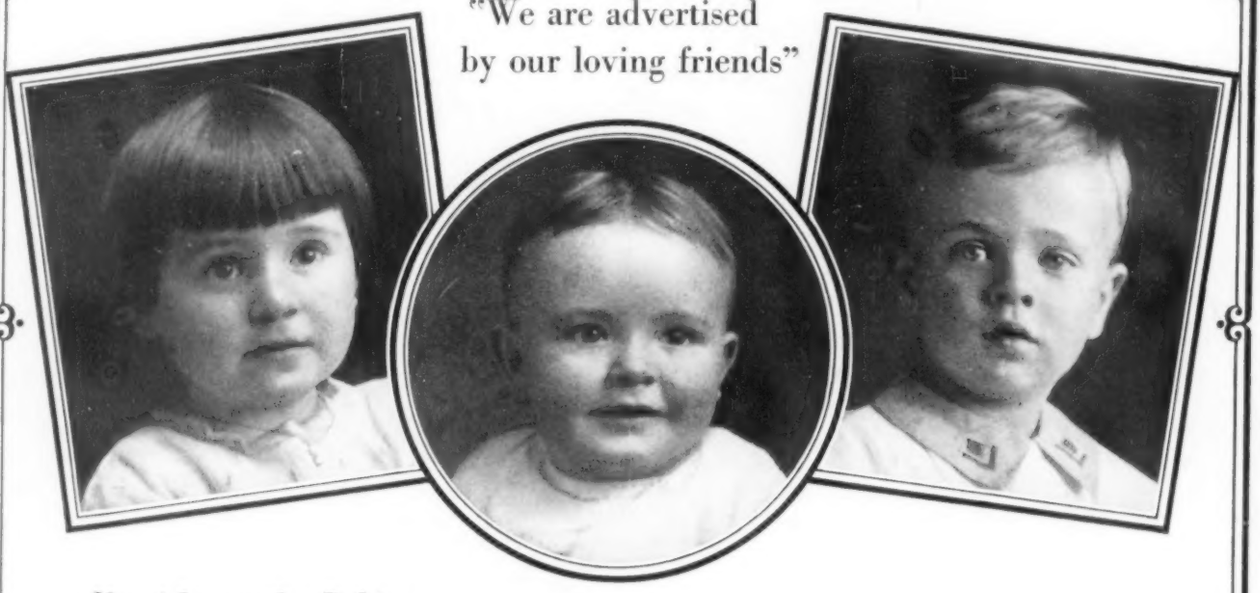

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## WHO'S WHO IN THIS ISSUE

JAMES D. WEINLAND, as instructor in business psychology at New York University, has tested under many conditions and with many personalities the slogans he offers as an aid to mental health.

DR. R. P. MACKAY is a young neurologist, a native of Canada now practicing in a midwestern city. ERNEST W. STEEL, a member of the engineering faculty of the Agricultural and Mechanical College of Texas, is the author of "Impurities of Water," which appeared in HYGEIA in February, 1929.

DR. RACHEL ASH has been especially interested in childhood fatigue since she first began the practice of medicine in a large eastern city. GLADYS LANE writes this month the second of a series of articles describing technics used by physicians. The previous article, "When the Doctor Takes a Blood Count," appeared in December.

Something new under the sun is the use of waltzing mice to detect the presence of deadly gas, described by WALTER BENTON, of Washington, D. C. In 1915, DR. NORMAN MATTISON heard a scientific paper read with the imposing title, "Orientation and Equilibration." After the reading of the technical and abstruse study, some one asked what practical application it might have. The question recurred to DR. MATTISON so persistently that after all these years he wrote as an answer, "The Shoe of Tomorrow," presented in this issue of HYGEIA.

DR. LOUIS KLEINFELD is an eastern specialist in diseases of the nose and throat. JOHN LEE MADDOX, world traveler and student of savage tribes, is the author of a book called "The Medicine Man." DR. W. W. BAUER is the progressive health officer of a midwestern town.

DR. H. S. DIEHL is director of the student health service at the University of Minnesota. STANTON TIERNAN records for HYGEIA readers an interesting bit of the history of dental education. DR. B. C. H. HARVEY continues his careful series describing the anatomy of the human body.


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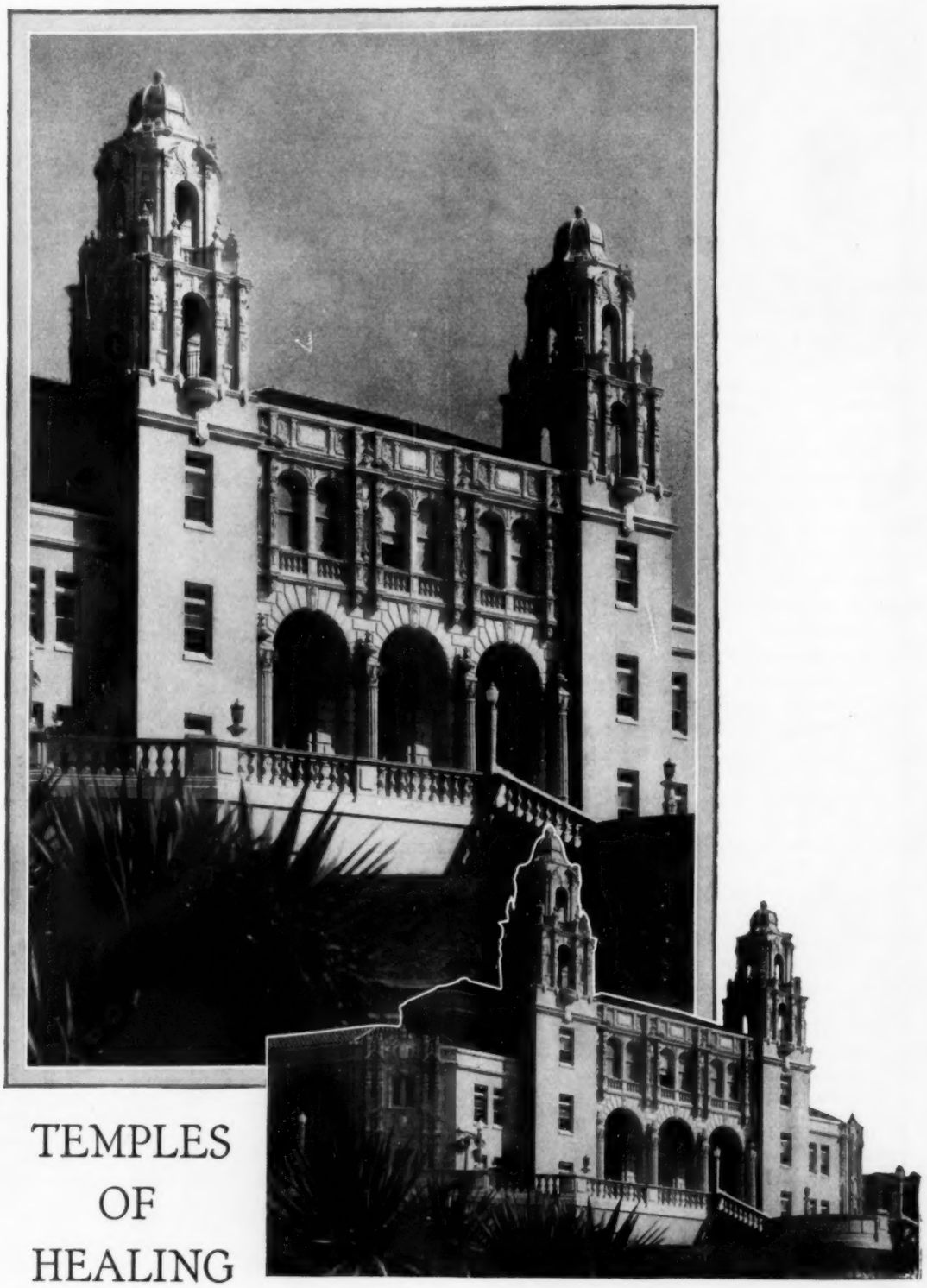


# TEMPLES OF HEALING

IV. Highland Hospital, Oakland, Calif.

# Mental Health Slogans

## By James D. Weinland

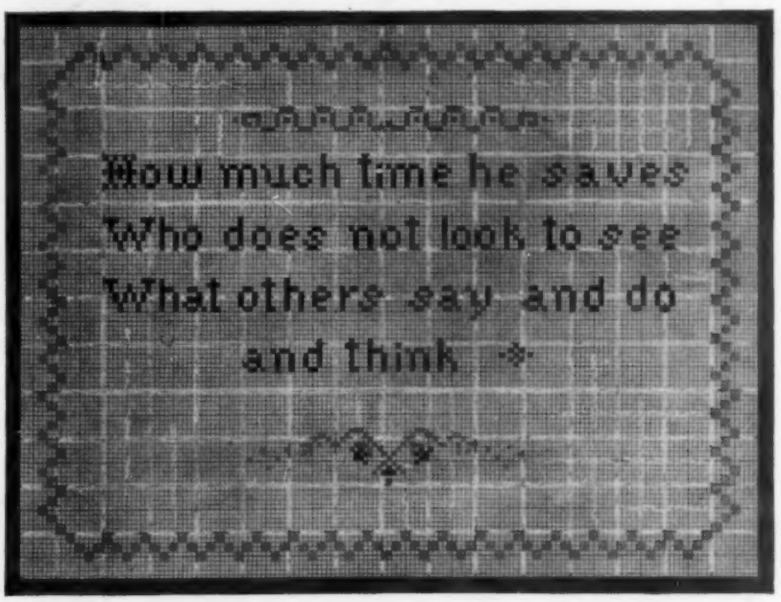
"WHEN we look down the long avenue of the future and see the good there is for us to do we feel after all what a beautiful thing it is to work, to live and to be happy." But too much of the time we are crossing the bridges of the future and letting our chances slip of glancing, with Stevenson, down the long avenues of the future. If we thought of it we would look upon those attractive vistas and be happy, but we do not think of it and we let our attention instead turn to the back yards of our mental environment.

Mental health is aided and abetted by cheerfulness, hope, confidence and purpose. These are the attributes of those who keep their attention turned to the better side of life. It is largely a matter of the direction one turns his mental gaze. It is possible to look out of the same window and to see at one time trees, flowers, distant horizons and tranquil sunsets and at another time rubbish, weeds, narrow fences and clouds threatening rain for the morrow.

Mental disturbance is increased by lack of perspective, narrow thoughts running continually in the same groove, and fear. Again it is often merely in the direction the attention is turned. Here is a man who worries about his health as if it were the only thing in the world to think about. Morning, noon and night his thoughts come back to his weakening body and to the gaunt shadow of death stalking before him. He can see nothing but death, think nothing but death, and in consequence does little that does not help to bring death closer. If he could turn his attention away and look over the fences of his closed-in mind he would feel better. If with Stevenson he could glance down the avenues of the future and see there work for him to do, he would be not only happy but perhaps on the road to recovery.

Nothing helps more to turn and hold the attention to a particular idea than a well worded slogan. The term need not be taken too narrowly here and we may include such statements as the quotation from Stevenson which introduces this article. Or, if you will, the twenty-third psalm, which might be considered a series of slogans and which has been used by generations of religious-minded men and women to chink up the holes in their courage.

It is not difficult to see how a slogan may help. First of all, it is a teaching device. Slogans carry ideas. "How much time he saves who does not look to see what others say and do and think; but only what he does himself to make it clean and holy." So Marcus Aurelius advises us that sticks and stones can break my bones but what you say can't hurt me, and gives us some ideas of the time saved in minding our own business peacefully without concern for the affairs of others.




A good slogan can brighten our whole horizon and fill us with courage. It can be an emotional stimulus. "Although men are accused of not knowing their own weaknesses yet perhaps as few know their own strength. It is in men as in soils, where sometimes there is a vein of gold which the owner knows not of." That makes one feel better immediately, particularly

if his eye lights upon it after he has been having a fit of the blues in which the world seems filled with giants of virtue and strength in whose company he does not belong and with whom he has no chance.

*Good Hook on Which to Hang an Attitude*

A slogan is a good hook upon which to hang an attitude. When one needs that attitude reawakened and urged into action the proper words will do it. For instance, if one has been feeling too self-made, arrogant and proud he may bring himself back to normal and a more grateful frame of mind by turning again to Stevenson and this observation he made: "How little we pay our way in life! Although we have our purses continually in hand the better part of services goes still unrewarded."

Slogans direct and hold the attention to a bracing thought. What better can a man do when he is down in the dumps than to repeat a few dozen times those words of Sir Philip Sidney: "A noble heart like the sun showeth its greatest countenance in its lowest estate"? Or this phrase from some unknown source: "Be alive to the chances that come your way but do not be worried or discouraged if you miss one. There are more chances and opportunities in life than we know." Or this: "The men who try to do something and fail are infinitely better than those who try to do nothing and succeed." Or this with Emerson: "Do that which is assigned you, and you cannot hope too much or dare too much." Or this with Solomon: "Sees't thou a man diligent in his business? He shall stand before kings, he shall not stand before mean men."

One great advantage of slogans is that they can be administered almost like medicine from a bottle. They can be taken in a moment. All that is necessary is that one select them in advance and have them handy in the dark moment. They can be taken more quickly than a mustard plaster and they act at once.

The busy man can use them much more easily than he can use poetry or general literature. The same effect can be obtained, of course, by putting one's self in touch with the great minds of the world who have recorded themselves in

stimulating stories, or enlightening drama or noble poetry. But these means are not so open and easily obtainable. Poetry is often hard to understand and one must be in the proper mood to appreciate it. The drama of life portrayed on the stage is not always available, and when it is there is always some expense both in time and money attached to it. Stories often stimulate one for the moment but may have no lasting effect, like a summer breeze that dies down and leaves one sweltering.

Slogans are easy to remember, are penetrating and carry ideas. Sometimes they carry a whole system of ideas. "Know thyself" is a simple slogan that can carry a myriad of thoughts clinging to it as one advances in the knowledge it advises. So too with the phrase "Be your age!"

Used at the right time the words can penetrate like a sharp dart into a mood and dissipate it. They act like a bugle call marshaling the forces of our resolution and ordering them into action.

*Find Your Own Particular Slogans*

But before a person can use slogans to the full limit of their effectiveness he must select some that belong particularly to him. Every person has his own problems to face both of individual make-up and mental outlook. Some phrases will mean a good deal to him, but he will have either to find them or make them up before he can use them.

Nearly everybody remembers Coué. He used the home-made slogan, "Day by day in every way I am getting better and better," and varied this for individual cases. Many persons found this extremely helpful; others found the phrases too empty and felt foolish in repeating them. Such persons could profitably hunt for well made slogans carrying definite ideas. Many

slogans have been polished by time or skill and are beautifully constructed. One can say them over and over without feeling foolish. "Grow old along with me, the best is yet to be—the last of life for which the first was made" carries the idea of delightful old age far better than many persons could phrase it for themselves. Such a sentence can be repeated often without hurting one's pride.

So there are slogans hidden away in the world's literature that fit almost any desire. Proverbs are rich in them. Poems are jeweled with them. All one has to do is to select them for his particular need, memorize them, keep them handy and use them.

So when we veer to the right or the left in our mental outlook the timely use of a slogan can sometimes bring us back. Or when we go plodding along through life looking at the ground, a stimulating phrase can make us look up and glance about. In brief, properly selected and administered, they are good for what ails us. With the help of a few slogans fitted to our personal needs we can go hopefully forward trying so to live, "that when we come to die, even the undertaker will be sorry."

*Some Suggested Slogans*

The Utmost for the Highest.

A man perfects himself by working.

The characteristic of genuine heroism is its persistency.

Every one gains strength by mechanizing a large number of decisions.

A wholesome tongue is a tree of life.

When love and skill work together, expect a masterpiece.

A merry heart doeth good like a medicine.

The world has millions of starters, but only a few finishers. Only a handful who can be depended upon to produce a result. And it is only the result that counts, in school or in business or professional or social life.

A man is worth just so much as the things are worth about which he busies himself.

The roll of great leaders in human thought and effort have not been those who had the best opportunities, but those who have made the best use of them.

The Great God is very calm withal. How superfluous is any excitement in his creatures.

Ask and it shall be given you; knock and it shall be opened unto you; seek and ye shall find.

Whenever one learns to do anything he never has to wait long for an opportunity of putting his knowledge to use.

By becoming possessed of the spirit of the great you imitate the great.

It is the cause and not the death that makes the martyr.

You can never have a greater or less dominion than over yourself.

Patience and shuffle the cards.

The patient endurance of misery has never ranked high among the qualities that make us men.

Not what we have but what we use is our wealth.

That low man sees a little thing to do,
Sees it and does it;
This high man with a great thing to pursue
Dies ere he knows it.

He is best educated who is most useful.

If you have great talents, industry will improve them; if not wonderful abilities, industry will supply the deficiency.

## The 1929 Index

*AN INDEX and a title page for the 1929 volume of* HYGEIA *has been prepared and printed and will be sent to any subscriber on request. Address The Editor,* HYGEIA, *535 North Dearborn Street, Chicago.*

# Neuritis

By R. P. Mackay

*Neuritis due to prolonged pressure on the ulnar nerve often occurs in engineers.*

HOW often we hear our friends complain of neuritis, by which they usually mean vague and aching pains in arm, shoulder or neck. There is perhaps no more common word in the popular medical vocabulary, or one more frequently misused. It is like charity in that it covers a multitude of ills, and as a result of its wide application to almost every type of pain to which flesh is heir, it has lost any specific meaning it may once have had for the average man.

### *An Inflammation of Nerves*

As a matter of fact, the term neuritis has a definite meaning; it denotes an inflammation of nerves in some part of their course from the brain or spinal cord to their destination. Such an inflammation gives rise to definite symptoms, the presence of which warrants the diagnosis of neuritis and the absence of which renders the word inappropriate.

There is considerable variation in these symptoms, depending on the particular nerves affected and on the cause. Two main kinds of nerve fibers pass to the surface of the body, those carrying sensations, called sensory fibers, and those passing to muscles and producing their movement, called motor fibers. In addition, there are nerve fibers that pass to the sweat glands of the skin and others to the blood vessels of the body, serving to control the size of these vessels. Most nerves, being made up of bundles of these fibers, contain a mixture of these types. Thus, it is easy to understand how an inflammation of a given nerve will give symptoms varying according to the proportions existing between the constituent fibers. For instance, if the nerve affected was purely sensory, the symptoms would be of a sensory character, consisting of pain, tenderness, prickling and loss of skin sensitivity. A motor nerve, when involved, would give weakness in the muscles to which it was distributed, and would later cause wasting of the muscles. The muscles thus affected would fail to contract when tapped with a reflex hammer. A nerve with fibers passing to blood vessels might produce, when it became inflamed, redness, heat and swelling of the skin, or perhaps blueness and cold, owing to changes in the amount of blood passing through the vessels.

Since most nerves contain a mixture of all these types of fibers, the symptoms of neuritis are a mixture of pain, tenderness, loss of skin sensitivity, weakness of muscles and possibly wasting of the muscles, and perhaps difficulties with the circulation to the part. There are, however, unique characteristics in the symptoms of certain cases of neuritis, depending in each case on the particular cause.

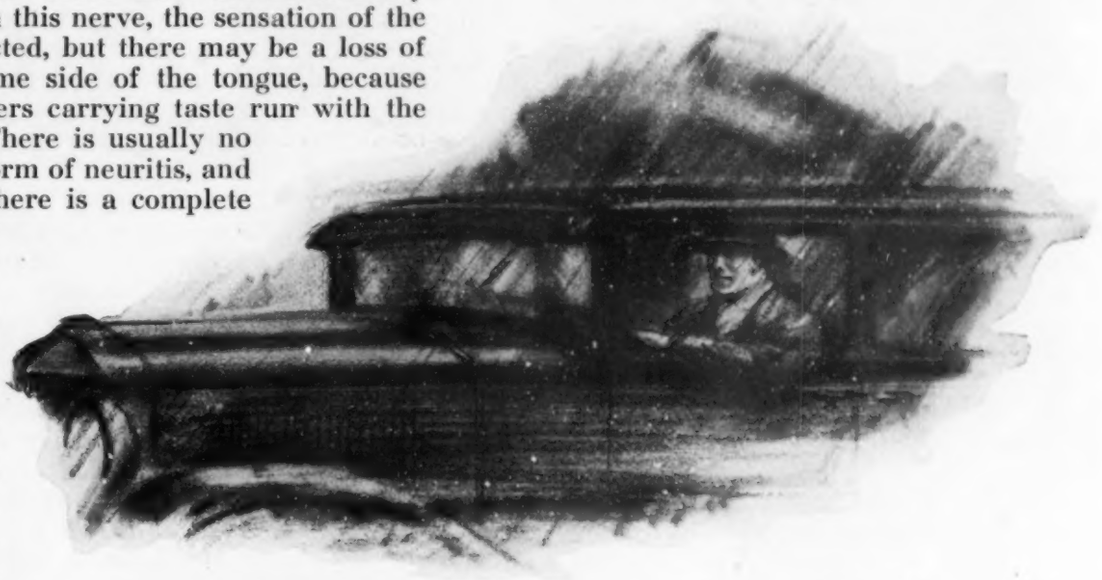
### *Main Types of Neuritis*

To discuss all the causes of neuritis would be impossible in one short article, but a few of the main types may be mentioned and described. It is customary to divide neuritis into two kinds—the localized, in which one nerve or a small group of nerves is affected, and the multiple, in which there is an involvement of nerves over wide parts of the body.

Local neuritis may occur in any part of the body and may be due in part to exposure of the particular part of the body to cold, wind or rain for long periods. For example, a man

drives a car for several hours on a cold day with an open window at his left, the cold wind and perhaps rain or snow beating on his left cheek. The next morning he may awaken to find the left side of his face paralyzed. This is due to a neuritis of the facial nerve, which is a motor nerve. Since there are no ordinary sensory fibers in this nerve, the sensation of the face is not affected, but there may be a loss of taste on the same side of the tongue, because some of the fibers carrying taste run with the facial nerve. There is usually no pain with this form of neuritis, and in most cases there is a complete recovery after treatment has been given.

Again, local neuritis may be due to injury to a nerve as it passes near the surface of the body. The injury may be either sudden and severe, as from a blow, or it may be slow and prolonged, as from chronic pressure. Examples will be given.



*A man drives a car for several hours on a cold day with an open window on his left. The next morning he may awaken to find that the left side of his face is paralyzed.*

What has been called the "Saturday night paralysis" is one of the most famous illustrations of neuritis resulting from pressure. A person, intoxicated after a Saturday night's drinking bout, slumps in a chair in a drunken stupor, his arm hanging limply over the back of the chair. This produces pressure on one of the large motor nerves of the arm, and after it has been continued for hours, causes a paralysis of the wrist, which usually disappears after a time.

Another illustration of the type of neuritis due to prolonged pressure is often seen in railway engineers who sit for hours with the right arm lying on the window sill of the engine cab. This causes pressure on the ulnar nerve at the elbow and produces numbness and weakness in the inner part of the right arm and hand.

Finally, local neuritis may be due to inflammation that advances from a neighboring site, often in bone, to involve a nerve, with resulting symptoms of neuritis.

### *Multiple Neuritis*

Multiple neuritis is a form of neuritis involving the nerves of the body as a whole and is caused by factors that are generalized rather than local. These generalized causes are numerous but are usually poisons of one sort or another. Some of these poisons are taken into the body from the outside, and are exemplified by alcohol, lead and arsenic. Probably the most common of all cases of multiple neuritis are those due to alcohol. Such cases of neuritis are seen most frequently in moderate but steady tipplers and are characterized by weakness of the feet so that the toes drag when the patient walks, and by weakness of the wrists, or "wrist-drop," and by pains, numbness and prickling in the legs and arms. Alcoholic neuritis is perhaps less frequent now than formerly, but is still commonly seen.

### *Lead Neuritis*

Lead neuritis, due to the chronic absorption of lead by painters, to drinking water conveyed in leaden pipes, or sometimes even to face powders containing lead, is another type of multiple neuritis. Benjamin Franklin noticed that printers sometimes became afflicted with what they called the "dangles"—a pain in the hands and wrist-drop. This was attributed to their habit of eating with hands unwashed after handling the dirty lead type. These were undoubtedly cases of lead neuritis, and Franklin was correct in accepting this explanation.

Other poisons causing multiple neuritis come from infections within the body. Many cases owe their origin to foci of infection in teeth or tonsils or other parts of the body. Diphtheria causes paralysis very commonly as a result of damage to the nerves by the diphtheria poison or toxin. Typhoid fever may be the cause of a type of multiple neuritis, which Sir William Osler accurately described as the "tender toes of typhoid." Rather rarely tuberculosis is the responsible agent. Also, there is a specific infection starting somewhat as does influenza and resulting in a generalized or multiple neuritis.

Still other diseases have neuritis as one of their symptoms. For example, most patients suffering from diabetes have neuritis in their legs at some time or another, usually of a painless type. Pernicious anemia often causes a form of neuritis characterized by tenderness in the calves of the legs, and during the Great War the German physicians described a form of multiple neuritis that seemed to be due to starvation. Whether this was actually a result of starvation itself or of a toxin produced in the body by lack of food, we cannot say. It is significant, however, that there is a form of neuritis seen in China and Japan as a part of the disease called beriberi, which is due to lack of a certain vitamin in the food.

### *May Be Myositis or Neuralgia*

Many other causes of multiple neuritis are so unimportant and infrequent as to render mention here unwarranted. Neuritis due to alcohol is different in its symptoms from that due to lead or diphtheria, and careful study by a skilled physician is necessary to decide whether a given patient suffers from neuritis or not, and if so, from what type. Thus, we see that the presence of neuritis cannot be assumed simply because pain is present in some part of the body. The dull, aching pains which occur after exposure, especially in the arms or shoulders, and which so often are called neuritis, are in most cases rather an inflammation of the muscles of the part affected, and hence should be called myositis. The modern physician makes the diagnosis of neuritis only when there are other symptoms in addition to pain, such as numbness, tingling, tenderness, weakness of muscle, or changes in the color of the area. He requires usually what are called objective signs, or signs that he can demonstrate without involving the patient's judgment. These include dulling of sensation or observable weakness, or tenderness of the nerves where they can be felt near the skin. With these or other signs present in whole or in part, the physician knows that the function of the nerves must be actually interfered with.

The word neuralgia is used when such objective signs are absent, and when the pain from which the unfortunate patient suffers is of a characteristic, paroxysmal and severe type. Sciatica may be either a neuralgia or a neuritis, since in some cases objective signs are present, though as a rule sciatica is free from these signs and hence is better classified as sciatic neuralgia.

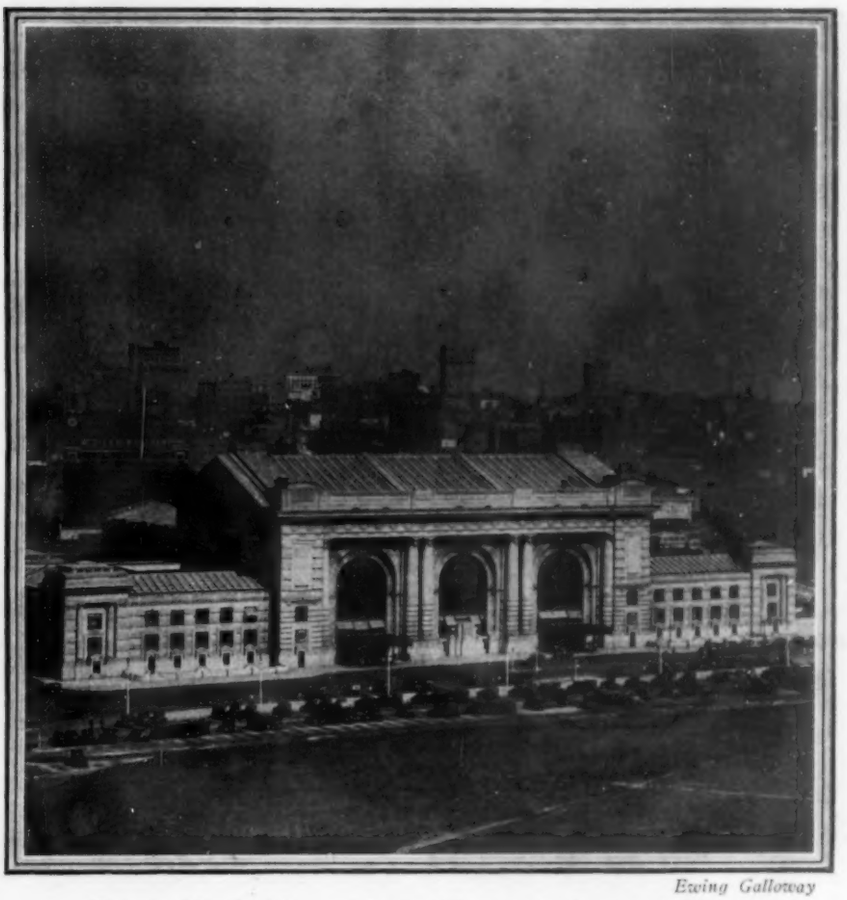
To catalogue the list of causes of neuritis is to obtain an idea as to what measures should be taken to avoid it. Exposure of the body to cold and chilling should be prevented, the use of alcoholic drinks should be greatly restricted or stopped entirely, and exposure to lead and arsenic guarded against. In a former day lead and arsenic neuritis were more common, but public health measures and laws for the protection of workers with these substances, or users of them, have already gone far to safeguard the public. We now have laws against the use of lead in face powder, and arsenic is no longer used in the making of wall paper. Lead pipes are becoming so rare in plumbing that drinking water is not a likely source of lead. The many diseases such as diphtheria and typhoid fever that may cause neuritis are to be avoided on their own account rather than on account of the neuritis that may be associated with them, and for this purpose ordinary precautions should be observed against contact with patients; personal cleanliness and hygiene along with the activities of our modern health departments are greatly lessening the incidence of infectious diseases.

### *Treatment Depends on Cause*

Little can be said concerning the treatment of neuritis. The care necessary in a given case depends largely on the cause and on the particular features present. The application of heat or the use of light massage which would prove of value to one patient may be inapplicable to another. Special regimens have been worked out for the treatment of chronic lead or arsenic poisoning; the many acute diseases causing neuritis and the focal infections often to blame have their own treatments by which they are best attacked. The care necessary in individual cases must be ordered by a physician who is skilled in the diagnosis of the causes of neuritis and who can then apply to each patient the appropriate treatment.

# Our SMOKY CITIES

## By Ernest W. Steel



Ewing Galloway

*Kansas City has its smoke problem, as is here evidenced.*

IN THE days when the black smoke of factory chimneys was considered as incense to the gods of prosperity a smoke abatement project was instituted by John Ruskin in the smoky city of Sheffield. This consisted of presenting to the public the books and objects of art that he had collected. Such an art museum, he considered, was needed to give out a few rays of light in the encircling gloom of a smoky and dirty industrial city.

The last twenty years have seen the method of the esthete replaced by engineering methods, which are less cultural but more easily appreciated by all that portion of humanity that has use for a laundry. The expedients that have been put in practice so far, while useful in keeping clothing unsmudged and of some value from a hygienic standpoint, are now being criticized as enhancing certain health hazards.

The first protests to be registered against excessive atmospheric pollution by smoke were caused by damages resulting to clothing and other fabrics, buildings, statues, and even to vegetation. There are considerable economic consequences also. In England, for example, it was calculated that smoke increased the cost of maintaining government buildings by at least $600,000 annually. In industrial Manchester the laundry cost to the average family was $7.50 more per year than in less smoky Harrogate. Higher costs of illuminating streets and buildings, and damage to fabrics that cannot be laundered might also be cited. In fact, upon economic grounds alone a good case can be made for smoke abatement, while the artistically minded can marshal arguments against a condition which, perhaps symbolically, turns statues and monuments to liberty, civic virtue and statesmen a grimy black.

Developments in hygiene have turned the attention of the sanitarian to smoke abatement. It is known that sunlight, more especially its ultraviolet rays, has a considerable bactericidal effect and consequently interception of the sun's rays by smoke must facilitate the spread of certain communicable diseases. Rickets, a non-communicable disease of children, is caused by lack of sunlight and it is not strange that the children of the sunless tenements of large cities are notoriously rickety. This disease can be cured and prevented by exposing children to sunshine which has not been deprived of its ultraviolet rays by passage through window glass or through dust and smoke. Sunlight has also been found to be beneficial in the treatment and prevention of tuberculosis, particularly in children. Whether this benefit is caused by ultraviolet rays or by some stimulative effect of the sunshine is uncertain. Whatever the cause it may be argued that unimpeded sunlight is conducive to a flourishing crop of children. Finally, atmospheric impurities are irritating to the nose, throat and lungs and may thereby contribute to the incidence of respiratory disease. It now appears after some years of smoke

abatement activities that, contrary to expectations, the use of the present methods probably has little effect in preventing disorders that follow irritation of the respiratory passages.

It will be noted that the statements of the preceding paragraph are given as hypotheses rather than as demonstrated facts. Undoubtedly atmospheric pollution has hygienic effects but the present fragmentary state of our vital statistics makes it difficult to array figures that are not open to legitimate criticism. It is definitely known, however, that workmen in certain dusty industries are especially liable to tuberculosis. It is also a fact that there is less tuberculosis among farmers than in any urban occupation. In 1912, it was found that at Pittsburgh pneumonia was more prevalent in the smokier sections of that city. Experiments with animals also indicate that with habitual breathing of smoke tuberculosis runs a briefer course to a fatal ending and that susceptibility to acute lung infections is increased.

Incomplete combustion of fuel is responsible for the carbon and tarry substances that make up the visible portion of smoke. It is against these that smoke abatement measures have largely been directed. Fuel burning, even when complete, results in invisible products that pollute the atmosphere. These are light-colored ash and various gases of which sulphur compounds are the most important. The invisible products of combustion have been neglected heretofore but their importance as irritants to the nose and throat is now being recognized.

While the amounts of smoke encountered vary widely in different cities, the sources of visible smoke and their relationship to each other are about the same. Industrial plants are responsible for about 45 per cent, railroads for from 15 to 20 per cent and domestic stoves, heaters and furnaces contribute the rest. As yardsticks in the application of abatement measures methods of smoke gaging have been devised. The simplest method consists of catching the sootfall in cups and weighing it. At Pittsburgh, in 1912, before smoke abatement measures were adopted, it was found that one thousand tons of solids fell upon each square mile per year. Of this material about 1 per cent was tar, 31 per cent combustible matter and 68 per cent ash. The solid matter falling into cups is merely an indication and does not tell the whole story. Dust determinations in the business district of Cleveland showed that in one year over an area of one square mile and 200 feet in height 20,000 tons of solids were carried through the air.

Recently investigations have been made to measure the interference exercised by smoke with the ultraviolet rays. Shrader, Coblentz and Korff, in 1927-1928, found that in and about Baltimore 50 per cent more ultraviolet rays

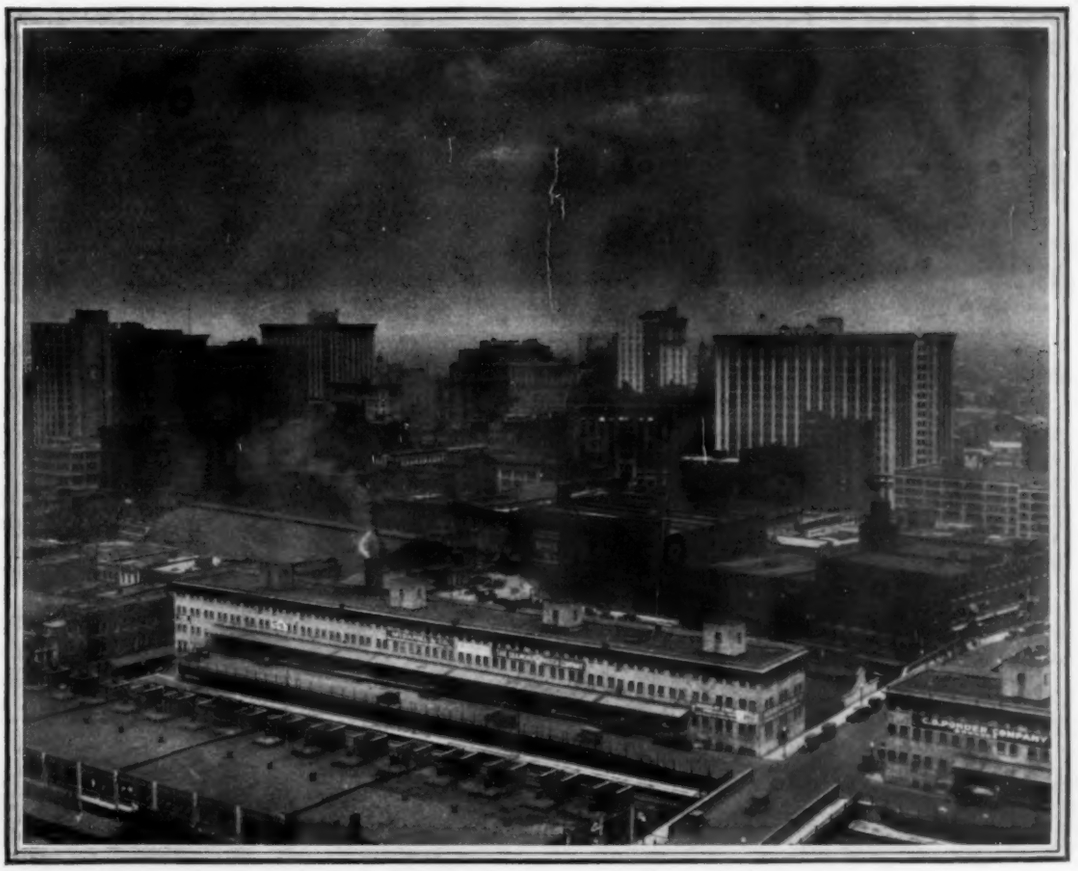
*Ewing Galloway*

*Indianapolis, too, has many gray days.*

*Chicago's factories send forth volumes of soft coal smoke.*

*Ewing Galloway*

reached the earth in the country than in the city. As might be expected, determinations of soot-fall made by the cups at the same time as the ultraviolet ray readings indicated an inverse relationship between the solids in the atmosphere and the ultraviolet ray content of the sunlight at ground level. It was also found that the solid content of the air was lower on the



*Atlanta, Ga., because of its smoky skies, has been termed "the Chicago of the South."*

*Pittsburgh's pall of smoke has been much reduced by years of smoke abatement work, but as the visible smoke has lessened, the sootfall has unfortunately increased.*

tops of buildings than at ground level, with a corresponding increase in ultraviolet rays; and that when the incidence of ultraviolet rays is least the bacterial contamination of the air is at its greatest. They also found that tarry products and carbon are far more efficient than is siliceous dust in occluding ultraviolet rays. These observations serve to strengthen the hygienic argument for smoke abatement.

### *Measuring Smoke*

Practical measures for smoke abatement require more specific methods of smoke determination and measurement than those already indicated. The Ringelmann chart has been widely used to grade the smoke issuing from chimneys. It is made by drawing black lines of varying width and spacing on white paper. The lines are so arranged that if they were placed on transparent material the different arrangements would allow 20, 40, 60 and 80 per cent of the light to pass through, respectively. On ordinary white paper held some 20 feet away they blend into four different shades of gray. A smoke inspector then, by comparing the color of any smoke with the chart, can rate it as to its density. If it is 60 per cent black or greater, it is considered as dense smoke.

The ordinances that govern smoke prevention usually provide that no dense smoke shall be emitted from the chimneys of industrial plants for more than six minutes in any one hour. In the case of locomotives only one continuous minute of dense smoke is permitted. Smoke inspectors check up by making observations with stop watches at railroad yards and in the vicinity of industrial plants and the smoke is graded as it leaves the stack. Inspections of house chimney smoke are not usually made. Prevention of this smoke is brought about so far as possible by such educational measures as distribution of leaflets, newspaper articles and lectures telling the proper way to start fires and methods of placing coal so that a minimum of smoke will be produced.

### *Solution Lies in Proper Stoking Methods*

Since visible smoke is largely unburned material, the institution of smoke abatement campaigns immediately started a legion of inventors to devising smoke-burning apparatus. To burn the combustible portions of smoke is possible but not practicable. The real solution is the application of proper stoking methods and the furnishing of sufficient air for complete combustion to the fire boxes of boilers. This calls for the instruction of firemen or, better still, for elimination of the human element by the installation of automatic stokers. Pulverized coal is frequently used with automatic stokers.

The furnishing of sufficient air to the fire boxes calls for changes in design or the placing of forced draft devices of various kinds. The latter expedient sometimes led to "smoke painting." Steam jets were installed above the fires but no additional air was conveyed inward by them. Consequently the smoke, while not reduced, was mingled with white steam and lightened in color, thus misleading the inspector.

The experienced smoke inspector, however, is an expert on furnace apparatus and design. His main work is preventing smoke rather than looking at it while it emerges from a chimney. He is also able to recommend methods that not only reduce smoke but at the same time effect economy in fuel. At the worst smoke prevention apparatus saves enough fuel to pay interest on the investment; at best it pays a profit.

In 1924, after twelve years of smoke abatement work, Pittsburgh made a resurvey of the smoke situation to obtain actual figures as to the good accomplished. It was found that the visible smoke had been reduced 60 per cent, the dense smoke 80 per cent and tarry deposits 70 per cent. So far the results appear to be good but unfortunately there is still a dark side to the picture. The total deposits of solids, as shown by the sootfall cups, indicated an increase of 40 per cent over the 1912 figures. This indicates that a campaign for the abatement of visible smoke does not satisfy all the requirements. Undoubtedly Pittsburgh's pall of smoke has been much reduced. Undoubtedly also the inhabitants of Pittsburgh receive more ultraviolet rays than they formerly did. On the other hand, they are still exposed to the irritating effects of atmospheric dust with its probable effects on the incidence of respiratory diseases.

Similar results have been noticed elsewhere. In each case the increase of total solids in the atmosphere is due in part to the use of pulverized fuel and in part to the fact that more efficient combustion leads to the production of a finer and lighter ash, which is invisible as it leaves the stack. Nor does smoke abatement eliminate the gaseous products of combustion, particularly the sulphur compounds. Accordingly we must conclude that the abatement of black smoke, desirable as it is, does not solve the problem of atmospheric pollution.

Some few industrial plants are already using devices to catch fine ash before it leaves their stacks. It has been demonstrated that 90 per cent of the flying ash can be so caught. Chemical methods can also be used to neutralize the sulphur, although these have not yet been applied at industrial plants. As in the abatement of ordinary black smoke, we shall have to have standards to apply in order to test the cures. Even more desirable are standards and specifications which will define the safe limits for atmospheric pollution in general and which will consider visible smoke, dust, fine ash and gases.

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# Epidemics of Septic Sore Throat Traced to Milk

EPIDEMICS of septic sore throat, a severe infection that spreads rapidly and sometimes results in death, have been invariably traced to milk from an infected cow. Modern methods of pasteurization and supervision of certified milk products together with intensive studies of the germ that causes the disease have done much to prevent epidemics. But although the outbreaks are rare, much remains to be done before the disease can be eradicated, in the judgment of Dr. D. J. Davis, writing in *The Journal* of the American Medical Association.

The major epidemics that have occurred in the United States are: Boston in 1911; Chicago in 1912; Portland, Ore., in 1923; Madison, Wis., in 1926 and Lee, Mass., in 1928. In the last three the source was definitely traced to cows infected with a germ called *Streptococcus epidemicus,* which is closely related to the organisms that cause scarlet fever, diphtheria and erysipelas. As soon as the use of contaminated milk was stopped, the epidemics stopped.

The problem of preventing these epidemics presents serious difficulties to the producers and distributors of milk and to public health officers, Dr. Davis points out. The disasters are so few and far between that too many communities continue in their routine methods of milk control unless the issue is forced by an actual epidemic.

The danger lies mainly in raw milk. All authorities agree that the germs are not highly resistant to heat; therefore efficient pasteurization as carried out by modern methods eliminates the danger.

In the production of raw milk, that is, certified milk, certain measures are recommended for the protection of the public.

First, all persons who handle milk should be carefully examined for the epidemic streptococci, because it is generally agreed by various workers that the usual if not the only way in which the germ is transmitted is from a human being to a cow by way of an abrasion in the udder or teat. Here the germs incubate and multiply rapidly. Then they pass out into the milk and directly to the throat of the consumer. All persons, therefore, who are suspected of carrying streptococci should be excluded from contact with cows or their products.

# Overtired Children

## By Rachel Ash

*Put them to bed early, feed them simple foods, and they will spring up alert and smiling like these three.*

NINE year old Jimmy is going to bed—at 11 o'clock in the evening. Jimmy is one of a large family of children who live with their more or less shiftless father and mother in the Sticks, a collection of hovels in a disreputable portion of town.

Jimmy's home comprises two rooms, serving all purposes. The smaller brothers and sisters have dropped asleep one by one during the course of the evening and have been deposited on various sleeping contrivances in the inner room. But Jimmy has stayed awake with eager interest while father is playing cards with certain cronies, and big sister and her beau are exchanging whispers in the corner.

### *"How Does This Concern My James?"*

Or perhaps father and mother have indulged in one of their periodic fits of wrangling and the children have escaped into the excitement of the streets to avoid the ill-tempered blows of their parents. And now at 11 o'clock Jimmy comes slinking home. Tomorrow morning, heavy-lidded, he will stumble out of bed at the last moment, gulp a cup of coffee and a bun, and rush off to school. Every possible moment out of school will be spent on the streets, playing with the gang. And, finally, Jimmy will be brought to a children's clinic—underweight, pale, dark circles about the eyes, always tired.

"But"—I can hear some of you more fortunate mothers who live in comfortable homes say—"how does this tale concern my Margaret or my James each of whom has a well appointed bedroom and is served only nourishing food? If only they would eat it! Why are my children so pale and tired? Or so fidgety and irritable?"

Let us investigate Margaret's day. Like Jimmy she rises just in time to rush through breakfast and run breathlessly to school. Margaret has already skipped two rooms, and by now she finds it no simple matter to keep up with her school work and maintain the high grades that so delight her parents. Saturday morning Margaret and James attend dancing school; Monday afternoon there is a music lesson preceded by daily hours of practice. Then on Thursday both children attend a gymnasium where they are taught to swim, do calisthenics and become acquainted with gymnastic apparatus.

Or perhaps James and Margaret take riding or tennis lessons—admirable exercise, thoroughly enjoyed by the children, but so timed that they must race home in order to arrive there as supper is being placed on the table. This rush for supper is a nightly occurrence whether their exercise is being taken in the gymnasium or whether they are merely playing on the streets.

### *They Need a Social Secretary*

Add to these, innumerable children's parties, lectures, concerts, trips to museums and other places of interest; all of which seem necessary to complete the modern child's social and cultural education. Nor must we forget the Saturday afternoon movies.

In the evening Margaret and James work at lessons, while father and mother tune in on the radio in the next or even the same room. At

9 o'clock they are sent to bed—to dawdle and romp as they undress. Finally they are in bed —on tension, unable to sleep. Margaret becomes paler and constantly fatigued, while James becomes a behavior problem—grouchy, quarrelsome, negativistic. Both are brought eventually to the pediatrician, underweight, pale, dark circles about the eyes—even as was Jimmy of the two-room tenement.

Or take the preschool child trying to keep up with his or her older brothers and sisters. Big brother rides his bicycle or express wagon; little brother holds on behind. Round and round they ride for hours, little brother too excited and proud to realize his fatigue. Big sister plays house or school and expends her primitive maternal instincts upon little brother. He is dressed, undressed, scolded, caressed, sent on her errands—all to the point of exhaustion. Throughout the day the small child insists on or is forced into sharing the activities of the older children. At naptime and at bedtime he protests, begs and too often obtains an extra half-hour or hour to continue playing; and when finally in bed he is distracted by the movements of the other children about the house. This overactivity is frequently the cause of the failure of little brother or sister to maintain a satisfactory rate of growth.

I have seen a wise pediatrician produce a metamorphosis in such children by simple methods. To be sure this pediatrician first of all determines by careful examination that there is no serious physical disturbance present—no

*On Saturday morning Margaret and James attend dancing school.*

disease of heart, lungs, kidneys or tonsils, no poorly cared for teeth. Then it is impressed upon parents that this is not a case for medicine but for rest.

In extreme cases the children are kept in bed entirely for varying lengths of time. More usually breakfast and supper in bed are advised, together with a Saturday rest period, until a general improvement in health has manifested itself.

All parents that consult this pediatrician are cautioned not to permit their children to come to meals overtired, but always to arrange for a rest period of at least one-half hour in which the children may lie down or play quietly with

*Big sister plays house and expends her primitive maternal instincts on little brother.*

books or crayons. Similarly, children are not permitted to romp before bedtime. This is the ideal time for reading aloud or gazing at pictures, provided terrifying tales or pictures are not chosen.

A child possesses an undeveloped, rapidly growing nervous system and body structure. It is essential that adequate periods of rest be provided in which the body cells may recover the energy dissipated in hours of constant activity. Mere existence in a present-day community is a strain, beset as we all are with constant sensory impressions—the noise and whir, the shifting sights of the continuous rush of traffic past the home. To the child of the present age rest is more than ever a necessity.

We grant that your child must come in contact with the world in all its aspects—work and play. Take as your motto, however, the old philosophic adage, "Nothing in excess." Let him work and play within his limits of endurance. Drop the dancing or tennis lesson if necessary; don't force the child too rapidly along his scholastic career. Just as one man's meat is another man's poison, so the amount of activity that the superaverage or even the average child can indulge in safely may not be the proper amount of activity for your sensitive and more delicately adjusted child.

Watch your child unobtrusively, hold him down to that level of activity on which he maintains his best health—but don't make a mollycoddle of him!

# Making Your Heart Write

## By Gladys Lane

THE heart has always been an organ of interest, both from the emotional standpoint, it having been considered at all times the seat of the emotions, and from the scientific standpoint, it being considered the mainspring of life. So for years scientists and physicians have endeavored to discover the secrets of the heart.

Back in the middle eighties, heart specialists had at their disposal an instrument called a sphygmograph (from sphygmos, pulse; graphein, to write). It was commonly called a pulse writer. The doctor would snap a steel spring on the patient's wrist over the artery, and a long lever attached to the spring would move up and down gently at every beat of the pulse. In front of the moving lever, which ended in a sharp point, revolved a drum worked by clockwork. On this drum was smoked paper, and on this moving paper the point of the lever scratched the waves of the patient's pulse. This apparatus had been invented by Vierordt and perfected by Marey.

*An electrocardiograph, a valuable instrument in detecting heart disorders.*

In the middle eighties, a Scotch physician, Dr. James Mackenzie, began to experiment with the sphygmograph, tabulating and correlating all his observations and deductions. As the wrist pulse reveals only the action of the left ventricle, the chamber that pumps the blood into the arteries, he began to wonder what the rest of the heart was doing at the same time. Noticing a strong pulse in a patient's neck vein one day, he began to work on an apparatus that would also record the pulse of the vein. The pulse in the vein in the neck is made by the blood flowing into the auricles.

With the aid of a friend who was a watchmaker, he perfected an apparatus that would write down the waves of the vein in the neck and of the artery in the wrist with red ink on long strips of paper. By using this apparatus constantly and by painstakingly recording the minutest observations, symptoms and deductions, he learned to interpret the heart writings or tracings.

After constant experimentation covering a period of many years, Dr. Mackenzie came to many conclusions. One was the fact that a variation in the length of the wave in young people is not a sign of heart disease. He also discovered that a patient's complaint of occasional skipping of the heart was without significance, as he saw many of those complaining of this symptom live to a ripe old age. He concluded that the most common symptom of heart disease was discomfort or pain in the upper part of the chest following exertion.

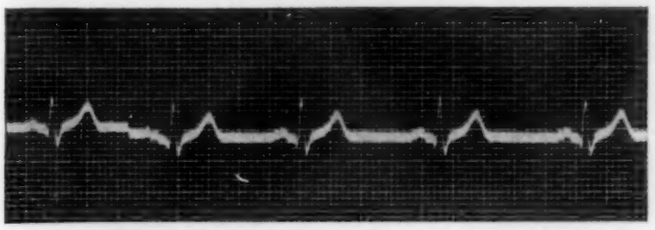
Dr. Mackenzie became internationally famous as a heart specialist and was knighted by Great Britain in recognition of his famous studies.

### *America's First Electrocardiograph*

Today there is available a perfected heart-writer called an electrocardiograph. The first American electrocardiograph was installed in the Rockefeller Institute in New York City fifteen years ago. The electrocardiograph has become such an efficient and valuable instrument that almost every well known heart spe-

cialist includes one in his office equipment, and every modern hospital boasts one. The photograph shows what the modern instrument looks like. A portable model has also been perfected which may be taken to the patient's home in case he is too ill to be moved.

The electrocardiograph is easily operated by means of a transformer and a few batteries.



*The writing made by an average normal heart.*

The working principle is that the contraction of the heart muscles generates minute electric currents and that these electric currents will affect a magnet.

Three lead electrodes covered with flannel pads, which have been immersed in warm saline solution and wrung, are attached to both wrists and the left ankle of the patient. These electrodes are connected to a galvanometer. By means of the string galvanometer, invented by Einthoven, the movements of the heart are recorded. This string, made of platinum, is barely visible to the naked eye, and is of course very sensitive.

### *How the Tracings Are Made*

The string is placed between the poles of the magnet and thereby becomes sensitive to the slightest electric change. The electrodes placed on the arms and ankle are connected by wires to the string. Electrical movements caused by the heart contractions are conveyed to the string and cause it to wave slightly.

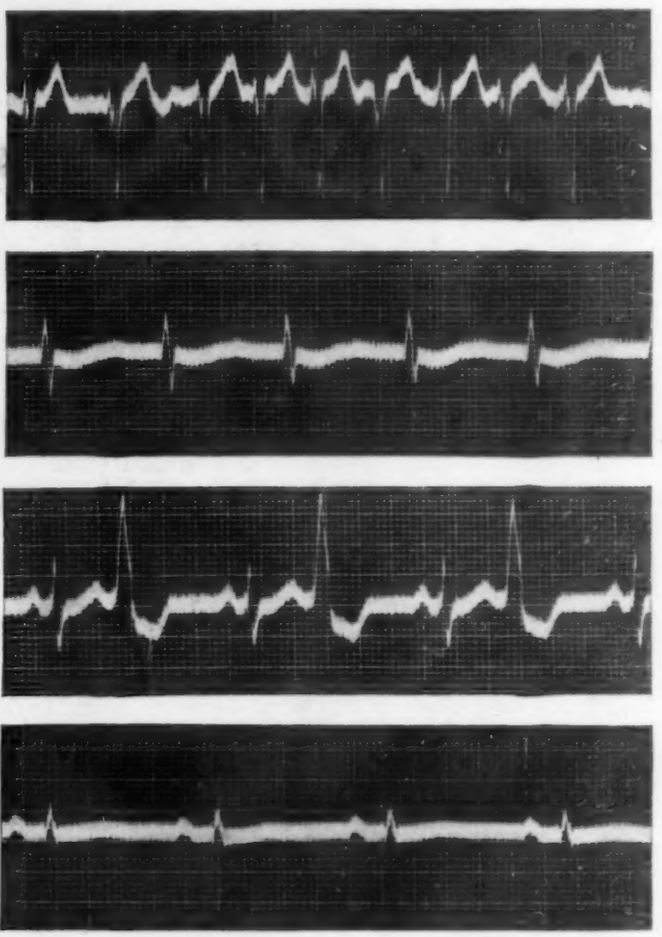
By means of microscopic lenses and an arc light, the shadow of the string is thrown upon moving photographic paper, and its movement is recorded photographically. In this column is an average, normal record. Each vertical line indicates a $\frac{1}{25}$ second time interval. The intensity of the heart current is measured by the horizontal lines.

The record is called an electrocardiogram but is commonly spoken of as a tracing. The photographic paper is about $2\frac{1}{4}$ inches wide and may be run as long as desired. An ordinary tracing, however, is about 2 yards long. This record, after being developed like an ordinary print, is a permanent one, and it is filed away to compare with future records of the patient, thus revealing any heart changes that may have taken place in the meantime.

The accompanying electrocardiograms taken on actual patients readily illustrate how the heart action is photographed. At the same time they reveal the marked individuality of each patient's heart action. It is exceedingly rare to find two patients having the same record; in fact, one patient's tracing is just as individual to him as his own photograph.

Each tracing reveals definite information and a physician who has made a study of the subject can distinguish separate movements of the ventricles and auricles and can draw definite conclusions as to the normal or pathologic condition of these parts of the heart. They become a check on what he hears with his stethoscope.

Not only is this apparatus valuable in detecting heart disease, but it is extremely necessary in following the improvement or relapse in cardiac conditions. It makes the heart write, and in many cases is instrumental in giving the patient a new heart; or better still, in many cases it reveals the fact that the various alarming symptoms presented are not indicative of



*The tracings shown above reveal the marked individuality in the heart action of different persons. Two persons rarely have the same record.*

cardiac disease. By means of this apparatus, the heart has fortunately been compelled to reveal the nature of its illnesses while there is still an opportunity to cure or alleviate most of them.

# The Mouse That Waltzed Himself into a Job

By Walter Benton

*The Japanese mouse is a better gas detector than the canary is.*

THE Japanese waltzing mouse, an odd little creature from the Orient, has challenged the right of the canary to its position as Uncle Sam's official gas detective, detailed to warn man of the presence of dangerous concentrations of that most common of poison gases, carbon monoxide. From the results of tests conducted by the Bureau of Mines it seems likely that the waltzing mouse may make good its challenge.

For years the bureau has conducted tests of various small animals and birds to determine their relative sensitivity to the presence of carbon monoxide, which is invariably found in mines following fires and explosions. The bird or animal, taken into the mine when rescue men explore the underground passages, acts as a gas sentinel. It is much more susceptible to the influence of carbon monoxide than is man, and by drooping or drowsiness indicates the presence of the deadly gas before the concentration has become heavy enough to affect the rescue workers. The rescue men enter the wrecked mine equipped with heavy, cumbersome oxygen breathing apparatus, which contains only about two hours' supply of oxygen. By observing carefully the conduct of their tiny gas sentinel, they are enabled to proceed considerable distances before bringing the apparatus into play and drawing on the precious oxygen.

After testing birds of various kinds, guinea-pigs, squirrels, rabbits, house mice, rats and other small animals, the canary was found to be the most sensitive, and was assigned the job of official gas detective. Hundreds of canaries have performed valiant service at numerous mine disasters and have helped to save many human lives. All the rescue cars of the Bureau of Mines have for years carried canaries.

The Japanese waltzing mouse has been found to be even more susceptible to the presence of carbon monoxide than is the canary. The waltzing mouse is one of the most incessantly active creatures known. As his name implies, he is a real waltzer. He seems unable to control his movements on a horizontal plane and prefers to run around in circles—wide circles, narrow circles and figure eights. He has a way of pivoting himself on one hind foot and making many gyroscopic circles without stopping. One has been known to spin in a circle, while pivoted on a hind foot, executing over 400 revolutions without stopping or reversing. The waltzing mouse also turns, twitches, jerks and sways its head almost constantly. It is totally deaf, and this is probably linked up with its habit of waltzing. The Japanese mouse is spotted and is smaller than the ordinary mouse.

It is this incessant activity of the Japanese waltzing mouse that makes him an ideal gas detector. It is responsible for the animal's high rate of breathing and high rate of blood circulation, with the consequent high demand for oxygen and keen sensitivity to the presence of carbon monoxide. So it seems that the little animal is about to waltz himself into a job.

# The Shoe of TOMORROW

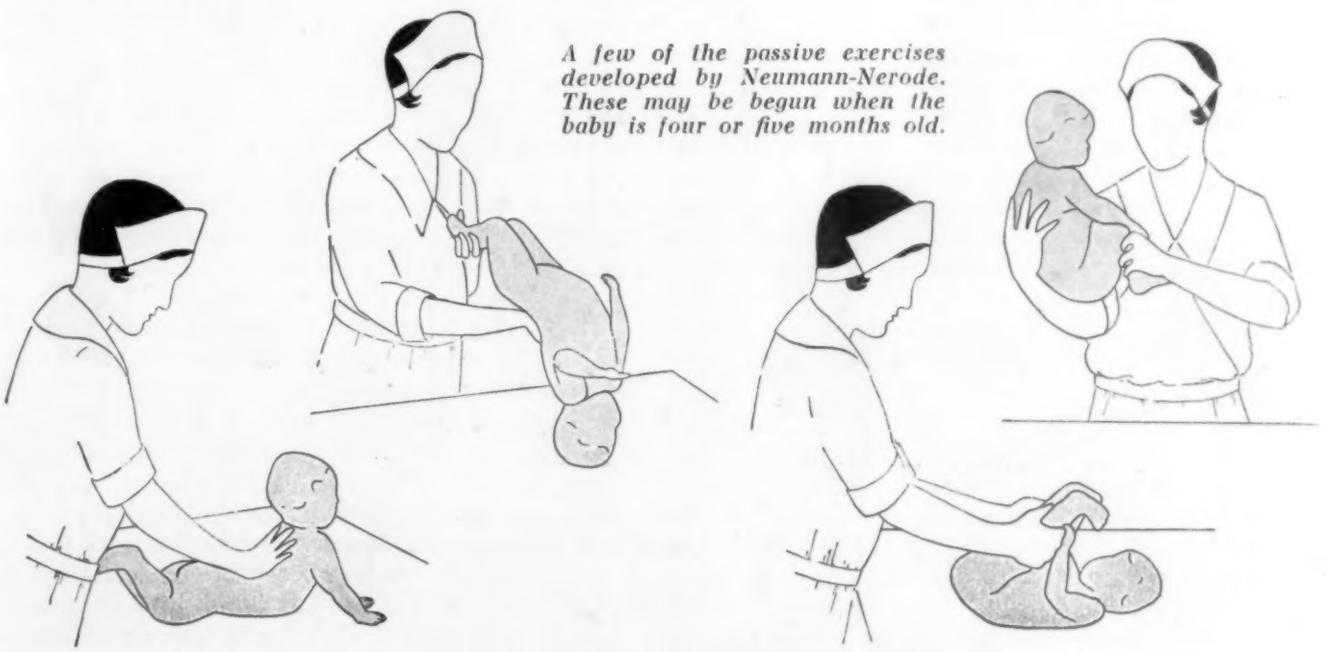
## By Norman D. Mattison

FEW persons have not at some time developed arch trouble, whether they have been conscious of it or not. Indeed, fallen arches of greater or less degree are among the most frequent of all acquired defects of the human body. If this were a condition that had to be endured as one of the infirmities of advanced age, it could perhaps be taken more complacently. Children, however, are by no means immune. The prevalence of one stage of chronic foot strain manifested in "knock ankles," for example, is as much in evidence in youth as it is in senescence, and no age after the earliest years is exempt from some static disturbance of the feet, often chronic in nature, sometimes severe.

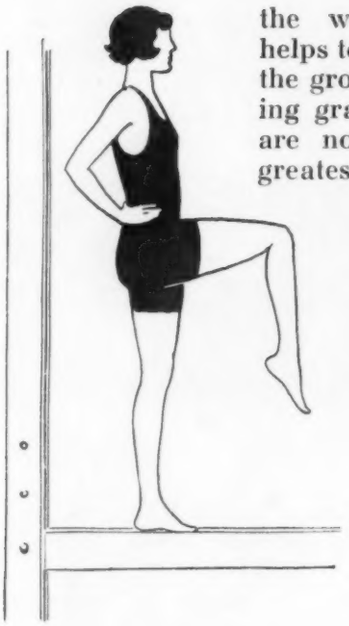
The subject of weak or fallen arches is always timely and has been frequently discussed. The conclusions are usually the same: If your arches are down, prop them up; and if they do not stay up, keep them propped. This is an interesting commentary on the lack of scientific inquiry into cause and effect, an inquiry that has not fully revealed a way for the human foot to keep actively at its tasks and still be free and unhampered for its essential and often exquisite expression of balance. In fact, a foot that is habitually used in balance needs no artificial means to aid it in its functions, and it will for this reason adapt itself better to exacting demands without fatigue or strain than if its fine adjustments are diminished by any props or struts for the arches.

One of the least concerns of the average person seems to be the arrangement by which he is able to maintain the foot-down position. What keeps us more or less upright? Why do we not sink down when we try to walk or stand? An inquiry into these questions would determine that the equilibrium of the body is an active phenomenon, and that its maintenance requires the constant effort of the muscles that limit certain movements and compensate others.

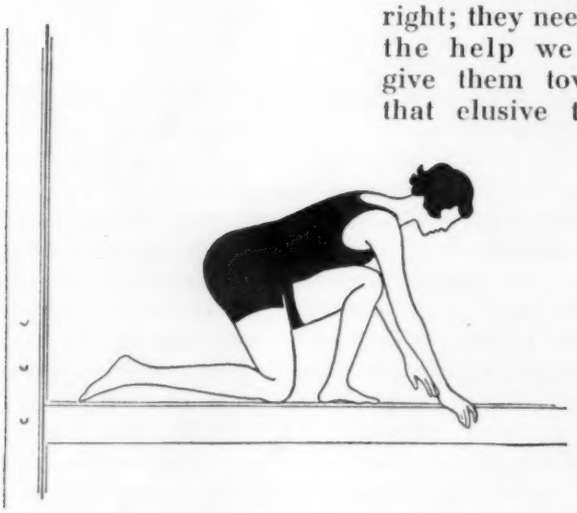
Equilibrium as it affects body posture, therefore, depends on a balance of tone between two sets of muscles—one the strong group, which resists the unceasing effect of gravity on the body and thus keeps us upright, and the other



*A few of the passive exercises developed by Neumann-Nerode. These may be begun when the baby is four or five months old.*



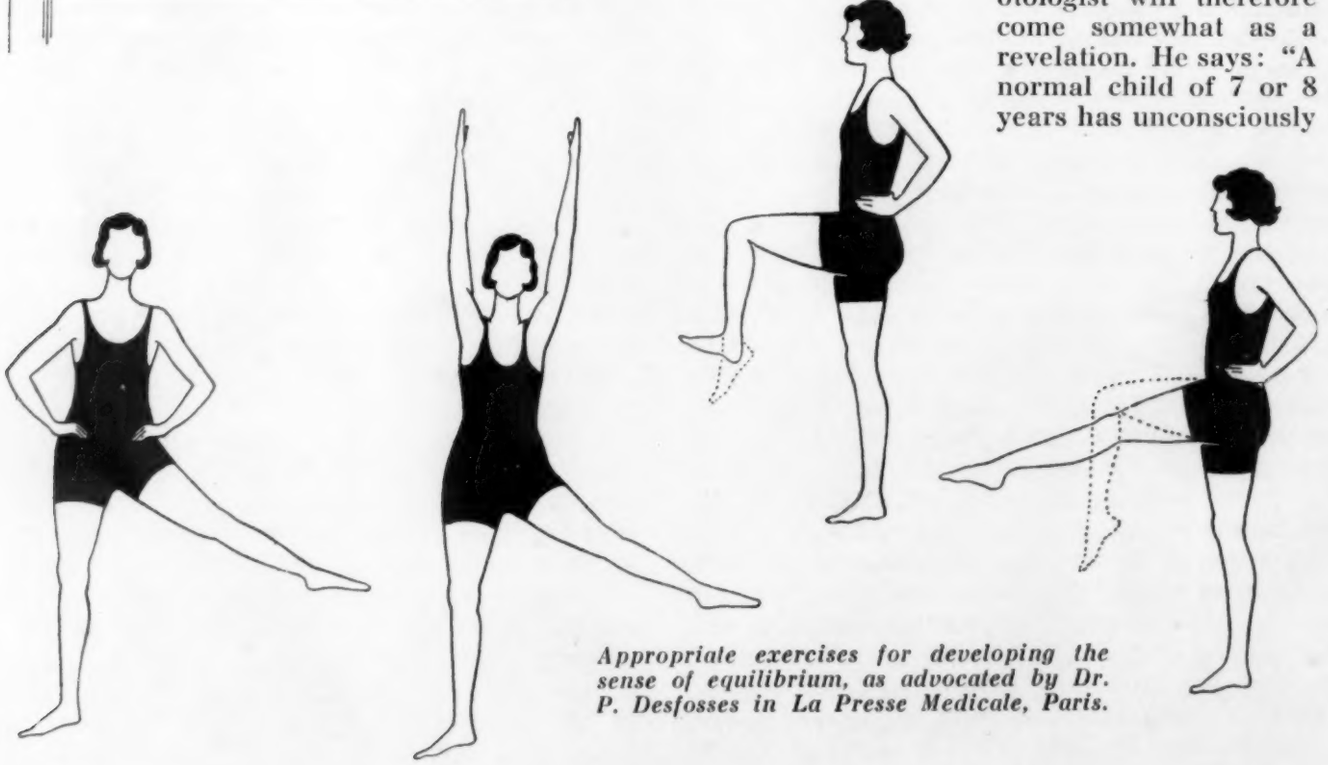
the weaker group, which helps to pull us down toward the ground. The down-pulling gravity muscles, if they are not resisted, are the greatest aids to the development of protruding chins, ewe-necks, round shoulders, rotundity, obesity and flat feet, to mention only a few of these undesirables. More power, then, to the control of the muscle groups that keep our heads up and our chins and abdomens in and us and our foot arches upright; they need all the help we can give them toward that elusive thing which is called by students of evolution adaptation to environment.



The German pediatrician Dr. Schoedel believes in establishing early in life this balance of tone in the body muscles, so that the approach to the erect station is a more direct and comparatively rapid one. He advocates and uses the system of passive exercises developed by Neumann-Nerode, some of which are here illustrated, and these may be begun as early as the fourth or fifth month after birth. They have an undoubted effect not only on the development of coordination and balance but on the health and resistance of the infant as well. The exercises are considered to have their maximal effectiveness during the first twelve to eighteen months, which is the period of greatest growth, and a child will as one direct consequence learn to walk earlier and with less effort because of them.

An observing person may learn much from watching the first steps of an infant. The first stage of standing with the help of a prop and with a maximal effort is followed by walking in much the same way. Gradually is solved the problem of gait and the erect station, which is simply the problem of equilibrium. Then walking with a gradually growing freedom of hands and arms and a gradually decreasing effort is acquired, and finally the equilibration station is reached. This is considered by competent investigators to be the most difficult problem in statics.

It might be assumed that this early acquired skill increases to its maximal development in late adolescence or early adult life. The statement of a well known otologist will therefore come somewhat as a revelation. He says: "A normal child of 7 or 8 years has unconsciously



*Appropriate exercises for developing the sense of equilibrium, as advocated by Dr. P. Desfosses in La Presse Medicale, Paris.*

acquired a sense of orientation (sense of position in space) and a power of equilibration (adaptation to it, both in rest and in motion), by an adjustment of muscles and joints, which in magnitude far exceeds that acquired in later years, by practice and training, for the most difficult pursuits."

These facts are restated in another connection by a leading English educator, who advances the interesting and informative conclusions: "The ordinary experience of life teaches us that in health we possess the faculty of poising our bodies in space with great precision; we are also capable of adjusting the several parts, in particular the limbs, to the performance of duties requiring a minute accuracy of localization. These powers of local and general equilibration show themselves to a marked extent at a very early period of life; indeed, great as are the effects of special training and experience, late acquirements are small in comparison with the powers developed as a normal event in the process of growth."

Man let himself in for all kinds of trouble when he left off going on four feet and became upright and two-footed. Ever since that day we have had a protracted tussle with gravity. For a practical demonstration, stand straight with feet together and close your eyes. Every movement, practically, that you make tends to throw your body into a state of unstable equilibrium.

All the more important, then, becomes the practice of developmental skills by specific exercises directed toward the improvement of the sense of equilibrium. While a number of exercises for increasing control of body balance and coordination are part of every complete system of physical education, these measures appear to have had their inception and probably their greatest development in Europe. Experimenters in France and Sweden especially have made valuable contributions to this subject.

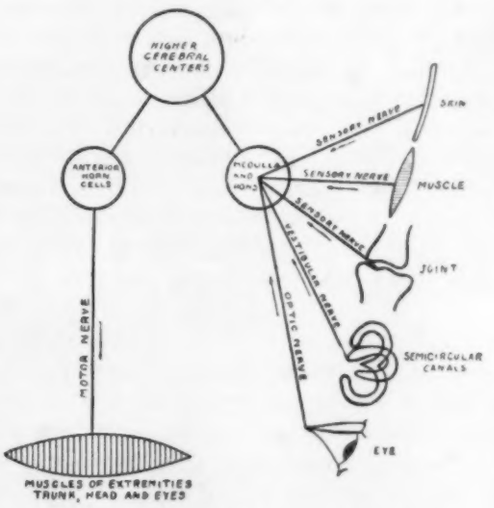
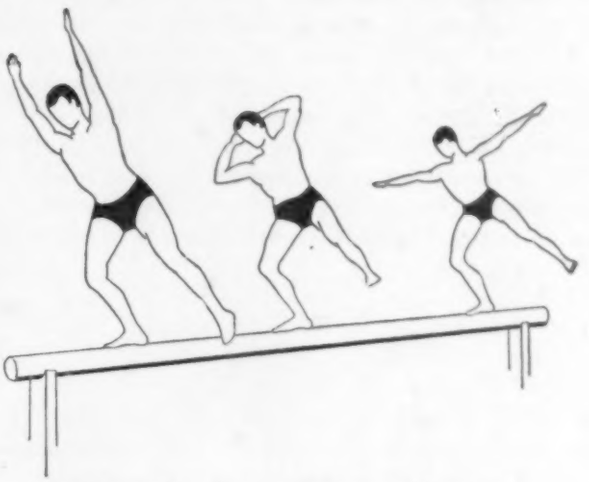



*Diagram showing our balancing mechanism. (After A. Broun.)*

The investigations of the French physician Dr. Desfosses are of particular interest in this connection. It is his belief that specific training should begin in early life, in order that the child may not only learn to keep his body balanced but to regain his balance when necessary. The simple but effective exercises directed by him have proved to exert a definite influence on the general position of the body, in that they help to discipline and strengthen the nervous system and to render the child's walk lighter and more correct.

This physician is strongly of the opinion that the sense of equilibrium is one that can be developed by education and by appropriate exercises. When skill is acquired as a result of these exercises, the vertebral and abdominal muscles work so effectively as to enable them at any moment to prevent the fall of the body whether in a lateral or backward position. The foot and leg muscles are important in the establishment of this balance and undoubtedly aid in this particular.



*The French navy makes use of exercises such as these for its men, in order to help overcome vertigo as the result of height.*

The exercises, some of which are reproduced here, are first done on the ground, where the base of support afforded by the foot is greater, then on a horizontal bar more or less elevated. These corrective measures, especially the ones on the bar, are also intended to cure a child of unreasonable fear of walking on narrow surfaces elevated above the ground, a fear that is the bane of so many adults.

The work of another French investigator, Lieut. Hébert, in connection with physical training in the French navy has had to do more with subjects in early adult life. In that part of his excellent monograph which describes and illustrates exercises for the development of the equilibrium sense, the author stresses also their advantage in overcoming vertigo as the result of height. It may be well to add a word of caution here, that the exacting exercises are indicated only for those who have especial apti-

tude or who have worked up to them by intensive training, though simple modifications may be used by those less skilled.

But how, it may be observed here, can all of this be put usefully and continuously to work? Even a casual observer knows that horizontal levels, such as city pavements or hardwood floors, create no particular demands on the balance mechanism of the body and of the feet. Well enough to develop by specialized training an improved sense of equilibrium, you may say, but in what way can this be maintained and even increased in the thousands of steps we take each day?

One might expect the answers to come from those who have developed special skills by gymnastic training. The statement of Dr. J. H. McCurdy, an authority on physical education, therefore, is significant. He observes that "few men and women after years in the gymnasium, even though they have acquired considerable skill, can walk lightly and gracefully." There must be something fundamentally and radically wrong with our feet or shoes, or with both combined under the existing order of things.

It is also an apparent truism that these are problems about which science and art are as far apart as they were in that nebulous era when man first began to use some sort of protective clothing for his feet. The shoe factory at present evidently has little of interest in common with the experimental laboratory, if one may judge from some of the extremes to which the art of shoemaking has gone. Shoe style shows are held not infrequently, at which it would seem the principal effort of the designer and manufacturer has been to make footwear as artificial as possible.

It is here and now proposed that there is a much greater need for a shoe utility show, wherein would be met and supplied the needs of a vast foot-suffering public. This would appear to be an obvious fact, judging from a statement made nearly twenty years ago in a leading shoe trade journal that there were then produced annually in this country arch supports for which the users paid over five million dollars, and the industry was then only in its infancy!

Is it possible, therefore, having developed an improvement in one's sense of balance by training and experience, to keep on using it actively and continuously during the day without depending on reinforced shoes or arch supports in them? Clinical and experimental research is giving some definite and encouraging responses that it is possible. Balanced footwear, to meet these changed requirements, would have to comply with at least three fundamental provisions in order to be generally accepted: in the usual types of walking shoes there must be no radical change either in conformity, appearance or weight; the contained foot must be free from artificial mechanical support; and, finally, there must be induced, in the construction of the shoe, an actual demand on the foot to balance not only itself but as well the superimposed weight of the body into it.

These are problems that in magnitude far transcend those of the present fetish of style, which apparently occupies so much time and thought in the present art of shoe designing and shoemaking. While change often takes place slowly, the change from modish to balanced footwear will come exactly as fast as a public, enlightened as to a need, demands it. Shoes will sooner or later, by user and maker alike, cease to be viewed with the diminished vision that one has in looking at his feet or anything else through the reverse end of prism binoculars or opera glasses, for example, whereby the object is much lessened in diameter.

In this connection, the following from a recent address by that far-visioned internationalist, Raymond Fosdick, is particularly relevant: "Galileo is dead these three hundred years, and his little inch-and-three-quarter telescope has been succeeded by a two hundred-inch giant. But would you believe it, there are today men and women in Middletown who tremblingly shut their eyes to every new social and economic fact that is offered them? There are business men who refuse to look at the tariff or the question of the inter-allied debts through the glass of the new unity of our modern civilization."

To these conditions and factors I take the liberty of adding the often wrongly fashioned modern shoe, which so usually lacks balance both in form and in use. So far as concerns foot balance and shoes, we may some day start our walk from Middletown toward Utopia, responsive to an improved sense of equilibrium and with better feet and footwear. It will not be, however, until scientific investigation and research, in accord with an awakened realization of a need, directs the way.

# Rhinitis, or Nasal Catarrh

## By Louis Kleinfeld

RHINITIS today is one of the most widespread of the less serious illnesses that afflict humanity. Roughly speaking, I should say that in the northeastern part of the United States, almost every other person presents some symptoms of nasal catarrh. The term nasal catarrh is not employed scientifically, since more than one disease gives rise to the same symptoms, which most of us call catarrh. Catarrh merely means infection, inflammation or flowing.

Acute rhinitis is another name for the common head cold. Chronic rhinitis is a condition characterized, first, by a long standing inability to breathe freely through the nose; and, secondly, by the presence in the nose of large amounts of sticky fluid called mucus, which the person has great difficulty in getting rid of.

Many of us do not realize that the part of the nose that is visible to us is only the outer nose; back of it is the inner nose. A space several inches long runs from the back of the outer nose and opens into a space that lies just above the throat. This inner nose is divided into left and right cavities by a vertical partition called the septum. Lying in these cavities are fleshy masses called the turbinates. In addition, the bones of the face contain hollow spaces, called the sinuses, which open into the nasal cavities. All these structures are lined by a soft moist membrane. In brief, the purpose of these parts is to make the air when breathed in through the nose warm, moist and germ-free, so that it is nonirritating to the lungs. Back of the nose there is often another fleshy mass called the adenoid, which has no useful function, and there are also two small canals, which lead to the ears for the purpose of ventilation.

### *To My Young Son, Growing Up*

'But when I became a man, I put away childish things."—*I Corinthians, 13.*

*God grant they do not leave him yet,*
*All of the little childish things;*
*I cannot bear that he forget*
*His young and brave imaginings;*

*That, growing up, he lose them quite—*
*The splendid marching days that pass,*
*The pirate in the wind at night,*
*The curious friendly fingered grass.*

*Is it such wisdom, that he can*
*At so great price become a man?*

—Sara Henderson Hay.

There are numerous causes of nasal catarrh. A first cause is environment. Obviously, living in a cold damp climate or working in a dusty atmosphere brings irritation to the delicate lining of the nose. Many persons are sensitive to irritating substances in the air; for example, hay-fever sufferers. Again, some women are sensitive to certain types of face powder and cosmetics.

A second cause of catarrh is the general health. If this is below par, one is likely to catch frequent colds. In time, these become chronic, especially if they are untreated or treated improperly.

As a third cause, if any of the structures near the nose, such as the adenoids or sinuses, are diseased they will keep irritating the nose itself by means of the infectious material they produce.

A fourth cause is that the structures within the nose, such as the septum or turbinates, may become swollen or misshapen, through injury or disease, and may block up some of the space necessary for the air to pass through easily.

There are a number of other factors the importance of which it is hard to judge. One of them is disease of the glands of internal secretion. Another factor is a condition of the body in which the person is hypersensitive to small amounts of certain substances in the air or food (called allergy). Still another is irritation of the reproductive organs.

As the result of any of these causes, the lining of the nose becomes swollen and pours forth an excess of mucus, often causing spells of sneezing. This mucus is so sticky that the patient often blows his nose too strongly and he may thus injure his ears or cause the nose to bleed. In addition, some of this mucus may

drop down into the back of the throat, sometimes giving rise to vomiting. If this fluid is swallowed, it may cause digestive troubles. If it is inhaled into the windpipe, it may cause hoarseness or persistent coughing and bronchitis. In some cases, this mucus can become infected, giving rise to a foul odor, which every one notices except the patient, because his sense of smell is usually much diminished.

Besides those disturbances caused by the excess formation of mucus, there are still other symptoms due to the swelling of the masses called turbinates. When these become swollen, they block up the nose, giving rise to headaches and compelling the patient to breathe through his mouth. Unfortunately, air breathed through the mouth is not properly moistened or warmed and may irritate the lungs.

### *Symptoms of Rhinitis*

A person is probably suffering from nasal catarrh if he has some of the following symptoms: (1) blocking of the nose; (2) frequent blowing of the nose or clearing of the throat; (3) frequent head colds, sneezing spells, bronchitis, hoarseness or chronic cough; (4) inflammation of the ears or diminished hearing; (5) unpleasant odor to the breath, often not noticed by the patient himself.

There are other conditions giving rise to such symptoms. Among these are: (1) chronic inflammation of the sinuses; (2) chronic diseases of the nose, such as tuberculosis, venereal disease and some forms of diphtheria; (3) cancer of the nose, and (4) the presence of foreign objects in the nasal cavity. Children have the habit of inserting buttons and other small articles into their noses and forgetting about them. Sometimes it is a long time before the cause of their nasal troubles is discovered.

Many of these cases of rhinitis can be cured, if taken early enough, and practically all may be made comfortable if treated patiently and intelligently.

The treatment consists first in finding the cause and, if possible, removing it. This requires a general physical examination, including a careful examination of the nose and throat. Based on the findings, proper hygienic habits should be advised. Important among these is the morning shower, with hot water followed by cold. In addition, the bowels may need regulation. The diet should be rich in fats and green vegetables. The environment should be made as nearly ideal as is practicable. For instance, the air in workshops can often be made dust-free by various devices. The physician is now prepared to treat the patient intelligently. He may do one or all of the following:

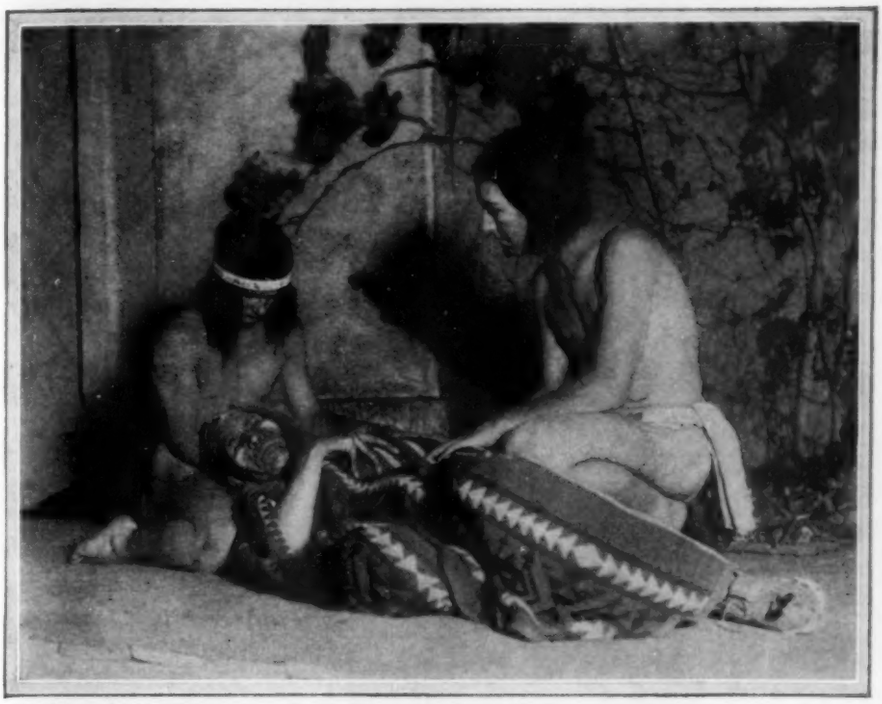
1. Cleanse the nose with an antiseptic spray.
2. Insert into the nose cotton plugs, called tampons, which are saturated with antiseptic solution.
3. Draw out or wash out the excess mucus.
4. Shrink the swollen tissues by cauterizing them.
5. Inject vaccines in those persons who have numerous colds.
6. Operate on the nose. This is usually advised only when a fairly thorough course of treatments has failed and if there is marked abnormality present, such as a large piece of adenoid, a badly bent septum, or pus in the sinus.
7. The use of x-ray or radium. This treatment is still being tested out.

In addition to the physician's treatment, the patient can often help himself by home treatments, on the advice of his doctor. These may consist of: (1) spraying the nose with a mild cleansing solution, such as can be made by dissolving half a teaspoon of kitchen salt in a glass of warm water, and following this by the use of either an oily spray or an ointment containing traces of menthol or eucalyptol; (2) in those cases in which there is a noticeable odor to the breath, washing out the nose with large amounts of salt water. This should never be done before the physician has carefully and thoroughly demonstrated the proper way to do it as otherwise the ears may be damaged. At this point, a warning is in order against blowing the nose too strongly, especially after swimming or washing out the nose.

### *Best Climate for Chronic Sufferers*

The ideal climate for chronic nasal infection is a warm, dry one, such as can be found in parts of Arizona, Texas, Southern California and Florida. Those of us, however, who cannot move to warmer climates will probably find the mountains superior to the seashore, although it is wisest to try both before deciding definitely for oneself. Unfortunately, although many patients benefit by a change in climate, the catarrhal condition is likely to return after the patient has been home for a while.

It may not be amiss to say a few words about the use of various patent medicines and solutions for spraying the nose. In the first place, it is important to find out exactly what the trouble is before attempting to treat it. In the second place, some of these drugs may be useless, while others may actually be harmful, especially when used over long periods of time.



Pacific and Atlantic

*Two scenes from a California pageant. At the left is depicted the passing of the last of the Indian medicine men. Below we see the primitive California redman at his campfire.*

Pacific and Atlantic

# "Big Medicine"

PART II

By John Lee Maddox

MEDICINE men among many savage tribes possess so much power that instead of submitting to decisions of chiefs and councils, they themselves are chiefs, and the members of their profession make up the councils. Moreover, they control other chiefs and are looked upon by high and low with such veneration and awe that their displeasure and maledictions are as effective as a knife thrust. The conjurors of the Loucheux and other Indians of British Columbia held their people in the hollow of the hand. In case of insubordination, for instance, they would give out that they proposed to dream of the death of the recalcitrants. When this news reached the culprits, they would seek out the offended doctors with offerings and beg their intervention to prevent the impending doom.

In Haddon's "Magic and Fetichism" there is this story of a native of the Congo who once visited a friend a considerable distance from home. One morning the host killed and prepared for breakfast a fowl of which the visitor would not partake lest it might be a wild fowl, upon which his tribal religious authorities had placed a taboo. Being assured, however, that this was not a wild hen, he ate heartily, and after breakfast went his way in peace of mind. Four years later, the two friends again met, and the former host asked the traveler whether he would not like a wild hen for dinner. The negro replied with trembling voice that it would be impossible for him to eat tabooed food. Whereupon the other man burst out laughing and remarked, "It did not kill you four years ago when I served a wild fowl for breakfast." The former guest was horror stricken and said with broken voice, "Then you deceived me." "No, I was only joking with you." But the bewitched black began to tremble and died inside of twenty-four hours—fear of having disobeyed his tribal medicine man killing him.

Among the negro races living in the West Indies, the name of the conjuror is obi-man. He is the keeper of the morals of the community. In case of theft, for example, the wronged person reports his loss to the obi-man. The conjurer at once gives out the report that he has set the

*From Seabrook's "Magic Island," Harcourt, Brace*

*Three Haitian sorceresses—a midwife, "the drunken one," and, in center, "Papa Nebo," oracle of the dead. Above is a serpent symbol from a Voodoo mystery-house.*

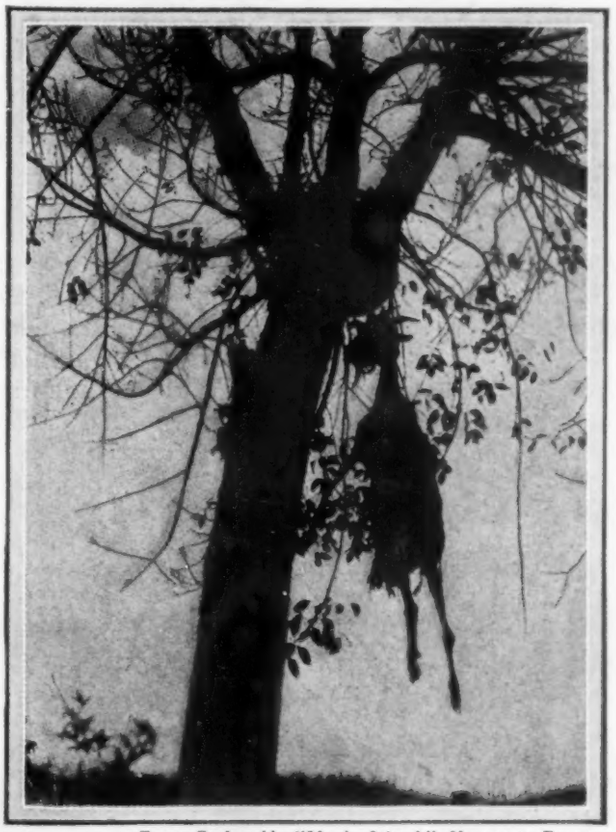
obi, or magic, for the thief. No sooner does the latter hear this dreadful news than his terrified imagination begins to work, and he thinks his only chance is to find another obi-man whose deities are more powerful than the masters of the first. If he cannot find a greater conjurer, or if after having found a man of higher rank, he still imagines that magic is set for him, his health soon fails under the racking belief that some great evil may at any time seize upon him. The least ache or pain or any sort of bad luck confirms his fears, and he is convinced that an irresistible and invincible foe will sooner or later get him. He grows morose; he can no longer eat or sleep; dark and dreadful forebodings fill his soul; his face continually wears a worried, haunted look; if he eats at all it is unsubstantial food, often dirt, and he gradually sinks into the grave—killed by superstitious fear of the obi.

Belief in the fascinating look of the evil eye, a superstition of wide dispersal among Mohammedans, among the more ignorant classes of southern Italy, and more or less unconsciously among the most cultured individuals of all parts of the world, rests upon the belief in the existence of an unfriendly spirit or spirits. A good illustration of this assertion may be seen in a book with the title "Disquisitions on Magic," written in 1603, by a Jesuit priest named Delrio. This book declares that "fascination is the power derived by contact with the devil, who, when the so-called fascinator looks at another with evil intent . . . infects with evil the person at whom he looks." The power bestowed by an evil spirit to fascinate, bewitch or exert an evil influence by a glance of the eye was not only a belief of the sixteenth and seventeenth centuries, but an article of faith of savage, pagan and medieval theology, and sanctioned by tribal legends, classical authors, church fathers and physicians of the Middle Ages.

Plutarch asserts with positiveness that certain men could destroy young animals and infants by the power of fascination, and affirms that the Thebans by the same means were able to wither not only the young but the strong. The Romans believed that the jealous gods were in the habit of casting their evil eyes upon the less powerful of their own number, and hence Mercury always carried the caduceus for protection. Woyciki, in his "Polish Folklore," tells of a tender father who blinded himself lest he should bewitch those near and dear to him by a withering glance of the evil eye with which he was unfortunately afflicted. In fourteenth century England, when the Black Death was sweeping over that country, people believed that the plague, now known to be bacterial in origin and spread by rodents, was communicated by a glance from the distorted eyes of a sick man.

In "The Castle of San Angelo," published in 1877, there is the story of an African who by the evil glance of his eye killed within two years no less than eighty persons. I have seen in modern Egypt sickly-looking babies, whose lack of health was attributed by their mothers to the influence of the evil eye. And even Lord Bacon was given to this superstition, for he advised individuals always to carry on their persons certain talismans made of rue or a wolf's tail or even an onion by which to avert the glance.

Since bad luck of all sorts is considered to be the direct result of the fascinating look, the belief naturally follows that whatever dangles or flutters, like the old-fashioned lightning rod, will attract the attention of the evil eye to itself and away from the person or object to be protected. Among the heathen Arabs, therefore, it was formerly the custom to hang rags or dirty clothing upon children in order to protect them from the pernicious look. I have seen little bags holding printed texts from the Koran attached to Turkish horses and Arab camels to afford protection from the evil eye, and I have seen the sides of Turkish houses literally covered by printed texts from the Koran with the same purpose in view. In Naples, where belief in the fascinating look is particularly active, ordinary sights are those of canvas bags containing verses of scripture or prayers to the Virgin attached to the equipage of draft and cab horses, and in addition, a complete armament of powerful charms made of horn, flags, colored ribbons and the like tied to the horses' harness.



*From Seabrook's "Magic Island," Harcourt, Brace*

*A Voodoo warning (above), and a Haitian deity.*

Amulets and charms not infrequently take the shape of a human hand, for the hand is regarded as an efficient means of protection. Thus, in the windows of certain stores in Rome are displayed silver finger rings with this alluring description of their purpose and value, "Amulets with which to ward off the evil eye." In Constantinople on one of the great marble columns in the mosque of St. Sophia is the outline of what appears to be a supinely opened hand. This hand is held in great reverence by superstitious Mohammedans, who stand underneath it and pray for protection from the withering glance of the evil eye. American travelers are always interested in this belief.

Saliva, in some quarters, is regarded as a potent charm against fascination. The women of ancient Rome believed that they could avert the evil glance from their children by expectorating three times into their bosoms. Pliny remarks that whenever any person looks at a sleeping infant, the nurse should expectorate three times upon the ground for the baby's protection from the dreaded power of the look.

Orthodox Russian peasants do not hold their priests in high veneration. It is bad luck to meet a cleric on any road or bypath, because he may cast the fascinating look. But if the worst should happen, bad luck may always be avoided, if, after the priest has passed, the layman expectorates into the air. A United States army chaplain serving with his regiment in Siberia was one day going to his quarters when he met the cook of his mess walking with a Russian girl. No sooner had the salute been given and returned than the girl expectorated, in order to break the spell, for, according to her notion, it made no difference that the clergyman was an American and a Protestant. He could still bring bad luck on her.

Everybody is aware of the strange power that certain minds have of working on weaker minds through the medium of the eye. If the human eye can have this strange, mysterious power, how much greater the power of the eyes of the gods. So many persons have held, and still hold, that the evil eyes of the gods, since the divinities are jealous of the good luck of man, lie in wait for the fortunate and prosperous of earth in order to trip them up, and send them loss, pain and all sorts of bad luck.

The classical illustration of this idea is the story of Herodotus concerning Croesus, king of Lydia, who, because he continued to have good luck over a period of time, was advised by his friend the king of Egypt to bring upon himself deliberately some bad luck, lest his prosperity attract the attention of the evil eye. Croesus, accordingly, threw into the sea a precious jewel. But the next morning a fisherman presented to the king the same jewel, which the toiler of the sea had taken from the mouth of a fish he

had caught the night before. Whereupon the Egyptian monarch broke off friendly relations with the king of Lydia, because he was convinced that the gods would most certainly trip up a person who continued to have good luck in spite of his own efforts to have bad luck, and with such a man he had no wish to be on intimate terms lest he come in for his share of the inescapable doom. Truly enough, Croesus in the end lost his kingdom and was saved from death at the stake only by the pity and clemency of his captor.

### *Even the Educated Cherish Silly Beliefs*

This form of belief in the evil eye persists even to this day among certain persons, who assure you that too much good fortune is likely to be followed by some kind of misfortune. "Boast not thyself of tomorrow," you hear them say. Another illustration is the reply of the Manxman, who when asked about the state of his health will never say that it is excellent; he generally admits that he is "middling," or says that "just now" he feels tolerably well. I am acquainted with educated Americans who hesitate to assert that they are in the best of health, lest they soon find themselves singing a different tune.

Men and women of considerable education still lend themselves to other phases of belief in the evil eye, such as the carrying of a horse chestnut, or a rabbit's foot, or a lump of camphor for good luck or for escape from disease.

Now why does superstition persist among the civilized? One reason is the fact that this phenomenon appears to be contagious. A person who lives in an atmosphere saturated by superstition seems to catch it. This is illustrated in an amusing manner by Bagehot in his "Physics and Politics." "In Eothen," he says, "there is a capital description of how every European resident in the East—even the shrewd merchant and the post-captain with his bright wakeful eye of command—comes soon to believe in witchcraft, and to assure you that there is really something in it; he has never seen anything himself, but he has seen those who have seen; in fact he has lived in an atmosphere of infectious belief, and he has inhaled it."

### *The Superstitious Temperament*

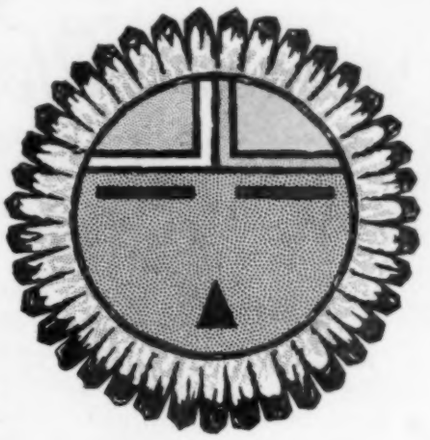
Another reason superstition continues among the enlightened is because there seems to be such a thing as a superstitious temperament. Given a superstitious temperament, mental acumen and education often count for naught. Doctor Samuel Johnson with his ponderous intellect and splendid culture believed that he would have had bad luck unless he touched every post and pole as he walked along a street or road. John Henry Newman, who possessed as subtle a mind and as thorough an education as any man of the nineteenth century, nevertheless believed that all the pieces of wood in the churches of Europe alleged to be parts of the cross of Christ are authentic—probably, like the

*Pacific and Atlantic*

*An Indian tribal dance, in which their deities are invoked. Above is a design from an Indian tapestry.*

loaves and fishes, multiplied by divine power. These superstitious ideas in some way or other had imbedded themselves into the mental equipment of these gentlemen of education and power, and nothing could eradicate the false notions. Yet their minds were scholarly.

Superstitious beliefs, moreover, endure because they have to do with matters the cause of which we are in ignorance. There are, of course, causes for all events, good and bad, but these causes are sometimes so remote, so hidden, so intricate and so complex that it is impossible for us to relate them to their effects. We say, with reference to such happenings, "As chance or luck would have it," which is only another way of confessing our ignorance. Be it understood, however, that until we are wise enough to trace all misfortunes to their legitimate causes, and until we are able to anticipate and control those causes, we shall have the clairvoyant and the crystal gazer in our midst, despite the vigilance and activities of the police.



The foregoing paragraphs have borne in upon us the truth that superstitious beliefs and practices have carried much bondage, suffering and even death in their train. This study, however, cannot fittingly be brought to a close without directing attention to the other side of the question, and showing by means of one or two illustrations that superstition has its advantages.

In China, for example, according to a high authority on that country, superstitious belief in spirits and their power of retribution prevents grievous injustice. When a Chinese is wronged, for instance, and cannot get his wrongs righted, since he believes in the avenging power of his own disembodied spirit, he sometimes kills himself, and, as he thinks, changes himself into an avenging spirit, thus getting even with his oppressor in death. "This simple complex of tenets lays disrespect for human life under great restraint." Again, since in China female children are not wanted, there is a tendency to destroy them in infancy. But fear on the part of Chinese parents that bad luck may follow the murder of their little ones leads many fathers and mothers not to kill their little girls, but to lay them upon the street in order that either members of some well-circumstanced family may take pity upon and adopt them or that some kind-hearted persons may deliver them to an orphan asylum.

We are informed that intelligent Chinese take advantage of belief in the avenging power of spirits and circulate among the poor and ignorant little packets of reading matter, which narrate instances of the terrible retribution often sent by the spirits of murdered infant daughters upon unnatural and cruel parents. These tracts appeal to the superstitious fears of many possible child murderers, and thus bring about merciful and humane treatment to female infants.

These instances of the beneficent influence of superstition are but samples of an indefinite number readily available from all parts of the world. In the economy of events truth has prevailed, and good has come out of evil, even that which we half in humor and half in contempt call superstition contributing to the store. Since this has been the history of the past, there are grounds for looking hopefully into the future, with the conviction that as astronomy has come out of astrology, as chemistry has come out of alchemy, as medicine has come out of magic—as science in general has come out of superstition—even so from the crude, grotesque and undesirable beliefs and practices of the present there shall yet come forth developments equally distinctive and equally beneficial to the human race.

# Who Says So~

## Health Educators or Health Racketeers?

### By W. W. Bauer

PART II

TURNING to commercial sources of health information, we come first to those that offer honest presentation of the health merits of commercial products or services. There is, of course, nothing inherently vicious in capitalizing the advantages to the public health inherent in a commercial project as long as they are honestly advocated. Sometimes this is done directly, sometimes indirectly. For example, there are insurance companies that print health literature for free distribution, not only to their policy-holders, but through any reputable official or volunteer health agency. Some make periodic health examinations available to their policy-holders, because these examinations tend to prolong life and postpone death claims; others make nursing service available for the same reasons. One of these insurance companies has frankly stated that for every dollar spent in this way the indirect return has been $2.

*Legitimate Commercial Health Propaganda*

We can have no quarrel with this kind of commercial health propaganda. It comes to you openly and says, "By your better health I profit financially, and so do you; let's work together." You can, of course, take it or leave it, but you cannot attack it. It bears its character upon its face. It tells you no unctuous story of a spurious and suspiciously altruistic interest in your health. It is in business for profit, and it profits by your better health.

The dairy industry has established its National Dairy Council for the avowed object of increasing the consumption of milk. This is no unselfish gesture, nor does the industry pretend that it is. Much of its activity is devoted to health education, always stressing the value of milk and milk products, but giving due place to other important health matters, such as dentistry, physical examinations, desirable dietary factors other than milk, and disease prevention by other accepted methods. It is for the profit of the dairy industry, but unless you are prepared to admit that all commercial initiative is necessarily reprehensible and cannot be admitted to a place in the public health program, you must accept the undeniable truths that the dairy council makes available and be thankful for them. Any other attitude would be absurd. The soap manufacturers have a Cleanliness Institute, the candid purpose of which is to make people use more soap, obviously for the greater prosperity of the soap business.

One might go on indefinitely, pointing out legitimate commercial employment of the health motive. It has been adopted not only by industries but by individual manufacturers. Here is one who manufactures a product containing the germ of the wheat for infant feeding. Is there any reason why he should not quote the researches that have demonstrated this to contain vitamins necessary to growth? Another has designed a superior type of table for conveniently bathing the baby. Is he not entitled to his legitimate profit? Another says that his soap will do all that good soap ought to be expected to do and nothing more; here is one with a line of serums and antitoxins of accepted standards; this firm is prepared to furnish pure drugs of high quality; that company purveys meat products of sanitary excellence and superior grade. Baby clothes, baby cribs, maternity corsets, cereals, fruits, ventilating equipment, playground apparatus, sun suits, pressure cookers—the number is legion.

It is all part of the legitimate business of serving the needs and the wants of the American people as long as the advertising is honest and the source of the information is plainly and frankly stated. The purpose, commercial gain, is not only apparent, it is primary. The health motive is secondary, but you know that it is secondary. That gives you the opportunity to check up on it, and the advertiser knows that honesty is the best policy.

These organizations are not furtive about their objectives. They capitalize the undoubted importance of their respective industries in maintaining the health of the nation. And they do it charmingly. Some of their publications are gems in conception and execution. Few, if any, health departments can equal them. And why not? The money expended in this way comes back, probably many fold. There is no reason why it should not.

### *Better Business Bureau*

There is another safeguard to advertising in the name of health that is incidental to a bigger commercial movement, that represented by the National Better Business Bureau and its constituent local branches. Under the slogan, "Truth in Advertising," pressure is being exerted through business channels to make the unscrupulous or careless advertiser respect the truth and stick to it in his advertising. Large periodicals, daily, weekly and monthly, are watching their advertising columns as carefully as they watch their news and literary departments. Some go so far as to request purchasers to notify them of unsatisfactory dealings with advertisers. Others test and approve by a seal the products advertised in their pages.

To the extent that these measures are more widely and strictly applied, it will grow harder for unreputable and disreputable business ventures, in health as well as in other commercial fields, to prosper. The worthy should be encouraged with the most eloquent support, patronage. Their motive is principally, and frankly, enlightened self-interest, but we need not decry them or forego their benefits for that reason.

There is no better measure of the success of public health education than observation of the great and growing extent to which the health motive is being employed in commercial promotion. One might quote health slogans by the score, mostly half-truths, which have been popularized on the billboards and over the air as well as through the printed page. We are all aware of the veiled insinuation method employed by certain advertisers to imply that failure to use their product is a subtle arraignment of our good breeding. "Yes, Jim's a fine fellow, but have you noticed ——." Then follows the indictment. He doesn't use so and so. It is an indirect but none the less powerful appeal to the deeply rooted desire of every normal person to have the approval and the regard of his fellowmen. Frequently the implication involves personal health or hygiene.

Many of these advertisements, when effective, result merely in waste of money by foolish persons who perhaps deserve to pay for their lack of discrimination. But sometimes serious results ensue, when advertising lures are followed to the exclusion of proper measures needed to combat real health hazards. Sometimes the will-o'-the-wisps are followed until it is too late to pursue the course marked out by the real beacons. Such tragedies can be prevented by asking not only "Who says so?" but "Why?" That much of this advertising is sincere, though harmful, may be true; its sincerity does not therefore mitigate the mischief it may do. Legitimate business ought not to need spurious and devious appeals; the best representatives of business have recognized this fact, and their number is growing.

Finally, we have the group of health appeals based on out and out charlatanism and fraud. Their assault upon your pocketbook is continuous. They do not care, apparently, whether you improve your health, lose it or keep it. They are cynically indifferent to your welfare; "There's one born every minute" is their motto. Unfortunately, their estimates of the birth rate of folly seem all too accurate. There is no other realm in which people are so foolishly—one might say, so magnificently—credulous. Upon this gullibility is based the most specious of all sources of health information and yet unhappily one of the most commonly resorted to by many people—testimonials.

### *Don't Believe Testimonials*

The American Medical Association has repeatedly and continuously exposed the fallaciousness of testimonials, even when honestly given. Nevertheless, their appeal still holds strongly with many people, and the reason is easy to understand. They speak the language of the man in the street. They are written, or at least purport to be written, by some one just like the reader, an average person, making the average person's struggle to earn a living and a little more, to conquer the attacks of ill health and to attain a measure of happiness.

But that is not all. They offer an easy and royal road to health. Do they enjoin you to change your unwise habits of life, to get more exercise, to eat more wisely and not so well, to sleep more, to have your teeth attended to? They most emphatically do not. They advise you instead to buy a bottle of this or a package of that, and be a new man or a new woman. Unfortunately, health is not attained or maintained that way. Health is a precious asset, for which we must work and fight if we would have it.

The charlatan is quick to take advantage of the trend of the times. Is there an epidemic of influenza? His nostrum will cure it. Is infantile paralysis prevalent? Take Bogus Elixir and laugh at germs! Does your gallbladder growl at your dinner? "Fear not, I will cure you with my prescription." Are you fat? Are you thin? Have you an unattractive skin? Perhaps your legs are bowed? Do you yearn to bend iron

bars and swing 40 pound dumb-bells—not the human kind? Clip the coupon! Do you have rheumatism, asthma, cancer, stomach trouble, flat feet? Write for the free booklet, in plain wrapper—no obligation!

Who are these people, holding in their hands the secret of eternal health and offering it to you, for a consideration? Perhaps their names will tell. They are prodigal in the use of words of good repute; "medical," "scientific," "research," "laboratory," "institute," "foundation," "chemical" are to be found in their titles. All too often they are false, and even when occasionally we find them using a legitimate title, we discover that they have long since fallen from repute and are debauching an honorable name for a nefarious end.

### *Only Quacks Will Promise Cures*

There is one characteristic by which you can know them all. The word "cure," cautiously and sparingly employed by reputable practitioners of the healing art, is for them a word to conjure with. Medical science cannot cure cancer, but it is a simple matter for the faker. Physicians can successfully treat diabetes under most conditions, but they cannot cure it; quacks find cure easy if you have the price! Your doctor cannot reduce your excess weight without diet, exercise or drugs, and being an honest man, he tells you so.

Not so with these mail-order purveyors of scented epsom salt, a dollar for a nickel's worth, plus instructions for diet and exercise! Increasing intelligence of mothers has driven the diphtheria cure and the "baby-killer" soothing syrup to more profitable fields. Many of them now exploit the flapper, with spurious and sometimes deadly treatments for retaining the fashionable figure.

The safeguard against them, one and all, is discrimination, skepticism, a "show-me" attitude. Make them show their cards. What support have their claims other than testimonials? What does your doctor say about them? What can your health officer tell you? Are they to be found in the pages of the best magazines? Do they belong to professional associations of good standing? When and where did they get their medical training? Have they by any chance ever been convicted of violation of the laws safeguarding the practice of healing? Has the Postoffice Department excluded them from the mails for fraud? Are they licensed? If you can't get this information, do the safe thing and let them alone.

Finally we have to consider the law as a safeguard. In theory, one might expect much of it; in practice, it can do little to protect you. The federal pure food and drugs law does, to be sure, prohibit false and misleading statements on the label or the trade package and requires the presence of certain drugs to be declared. This law applies only when products are shipped from one state to another; it is no protection against the sale of misbranded or fraudulent remedies within the borders of the state in which they are made. A further weakness of the law is that it controls statements only when made actually in or on the trade package. It does not prevent misleading advertising in circulars, newspapers, magazines, by radio or billboard.

### *Weakness of Pure Food and Drugs Act*

The greatest weakness of the pure food and drugs act lies not in the law itself but in the lack of observation on the part of those whom it is meant to protect. Many persons believe that it prevents the sale of remedies containing harmful drugs. It does nothing of the sort except in cases in which narcotic drugs are concerned. It merely requires that their presence be stated on the label. Such a statement, even if faithfully supplied, means nothing to many.

The United States Postoffice Department makes an effort to prevent the defrauding of the gullible by debarring misleading advertising from the mails. In theory, this is excellent. In practice, it often works only after much harm has already resulted and after the product has been so well advertised through the mails that the maker can readily divert his efforts to other channels of distribution and stay in business without using the mails.

It will readily be seen from the foregoing that health advice is not always healthful advice. It all depends upon who says so, and why. There is good health advice available from official sources, and occasionally some not so good. The voluntary associations can usually be depended on for correct information, much of which is made public through the press. The mere fact that the giver of health advice has something to sell does not always disqualify him as a source of information; many valuable contributions to popular health education are being made through commercial channels. But it does call for a measure of caution and a constant bearing in mind that the primary purpose of commercial participation in health education is profit.

It is always well to remember that group judgments, while not infallible, are likely to be better founded than individual opinions. That is one of the reasons why the official and volunteer health agencies and the family physician are the best and most dependable sources of information pertaining to health. They represent the more or less standardized and tested experience of large numbers of trained persons over long periods of time, backed by the facts of scientific experiment and observation. They have no axes to grind. They are safe guides to follow.

# Health Exams for College Students

By H. S. Diehl

H. Armstrong Roberts

*During the late teens and early twenties, the body is normally at its peak of efficiency.*

THE time in life during which most persons enjoy the maximum of physical health and vigor is during late childhood and the early adult years. During this period chronic diseases are rare, acute infections occur but usually are of short duration, and strenuous physical exercise produces a feeling of well being that is a stimulant to still greater exertion. Sleep may be irregular, diet badly chosen, other rules of hygiene disregarded and dissipation indulged in to excess, all with little or no apparent ill effect. At this time the body as a physical machine is at its peak of efficiency, its reserve is high and the individual truly should experience the thrill of life at floodtide.

### *Neglect Brings Later Trouble*

Unfortunately, however, life is not divided into distinct and unrelated periods, but the abnormal conditions or diseases that make their appearance at one stage of life frequently have had their beginnings in a much earlier period or have been the result of the neglect of health throughout several periods.

The periodic examination of infants has become so much of an established procedure in most communities that today it is a common practice for mothers to seek expert advice regarding the care, the feeding and the habit training of their children. More slowly attention is being devoted to the physical examination and the correction of physical defects of the preschool age group. Progress with these children has been less rapid than with infants but various activities and movements, such as the "summer round-up" conducted by the National Congress of Parents and Teachers, are giving considerable impetus toward sending to school each year a group of children unhandicapped by correctable physical defects. The school child, particularly in the grades, usually receives some health instruction and at various intervals a physical examination. Life insurance companies and other medical and health agencies by means of their physical examinations and health education services have done much to promote periodic health examinations of adults. But for boys and girls in the "teen age" and the early twenties few writers seem to have considered periodic health examinations important.

### *Should Analyze Students' Living Habits*

True it is that most colleges give physical examinations to new students but few make repeated examinations of students during their college courses; furthermore, the physical examinations usually given are very different from health examinations, which include not only a thorough study of the individual's physical condition but also an analysis of his habits of living and acting, and are followed by conferences concerning the procedures necessary to bring about improvement or conservation of health.

The national health program of today is centering its attention more and more on the health of the individual. This has become necessary because the major causes of death and disability are no longer diseases that can be reduced by legislative measures or by the

employment of sanitarians. For example, heart disease, which today rules supreme as a killer of mankind, may be the result of a variety of causes, such as focal infections, rheumatism, high blood pressure and syphilis. Focal infections, in turn, usually are present and gradually feeding their toxins into the system for years before permanent damage to organs, such as the heart, occurs or the characteristic symptoms of the disease appear. Periodic health examinations will discover many of the disease processes before permanent damage has resulted. In a group of 1,354 senior students who were given health examinations at the University of Minnesota last year 9.4 per cent had tonsils or remnants of tonsils that contained infection; 2.9 per cent had chronic sinus infections; 1.3 per cent had middle ear infections; 0.8 per cent had definite abscesses of the teeth, and 9.9 per cent had devitalized teeth. Any of these foci might well serve as a portal of entry for infection which could cause heart disease in later life.

Periodic health examinations also will discover some unsuspected cases of heart disease before the reserve of the heart has been exhausted and breakdown occurs. In the foregoing group of students definite valvular defect of the heart was discovered in 1.5 per cent of the total. Advice was given to each of the students afflicted in regard to the prevention of further damage to the heart and to the building up of its reserve strength. High blood pressure, which is one of the major causes of heart disease, was found in 17.5 per cent of the students examined, 12.5 per cent having systolic pressures between 130 mm. and 139 mm., and 5 per cent having pressures of 140 mm. or more. One unsuspected case of syphilis, still in the curable stage, was discovered.

### *Uncovering Disease*

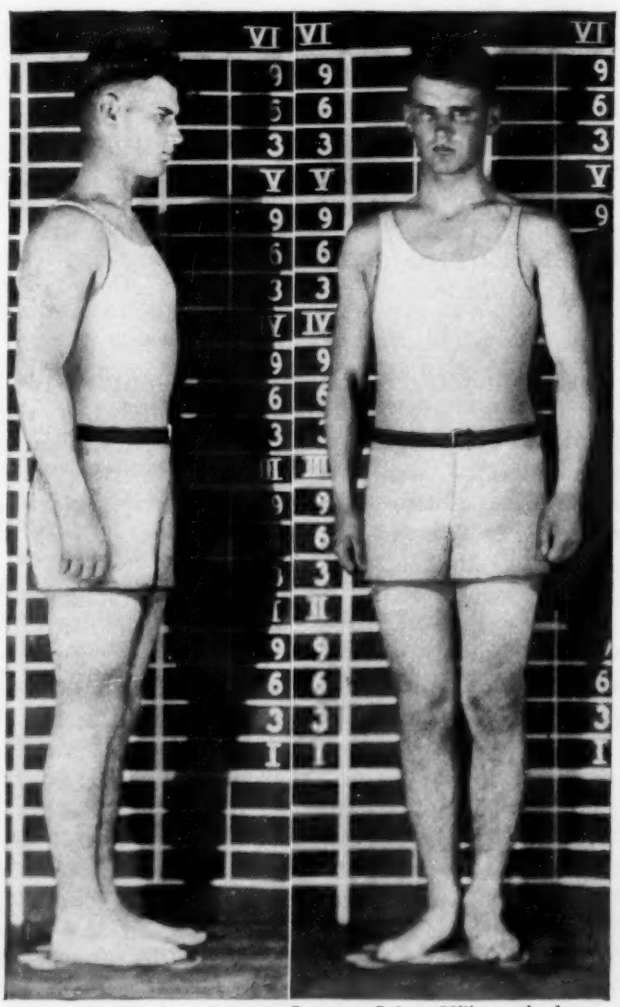
Cancer, which now ranks second as a cause of death in this country, is a disease primarily of later life, but occasionally cancers or precancerous conditions make their appearance in young persons. Tumors, moles or keratoses considered of importance sufficient for the examiners to recommend removal or further investigation were discovered in 1 per cent of the student group.

Tuberculosis, which for many years was the paramount destroyer of human life, still causes more deaths than any other disease in persons under 55 years of age, that period of life during which a person should be of the greatest value to his family and to society. Infection with tuberculosis usually takes place in childhood, after which the disease develops intermittently whenever the resistance of the individual is lowered. Consequently the period of early adult life when energy is high and when the symptoms of the disease are minimized is one in which the disease may make rapid and alarming progress without being suspected.

The health examination of this group of senior students revealed active tuberculosis in one student. This student realized that she was tired but thought that it was only the result of the rather strenuous life that she had been leading. Quiescent, or healed, tuberculosis was diagnosed in 0.9 per cent of the group and suspicious chest findings making frequent reexaminations advisable were recorded in 1.4 per cent. Over a period of four years the health service of the University of Minnesota has made the first discovery of active tuberculosis disease in twenty-five students.

### *Student Needs Freedom from Minor Defects*

Other diseases, previously unsuspected, which have been discovered early by these examinations are diabetes, hyperthyroidism and duodenal ulcer. Each of the students affected had had a physical examination from one to three years previously and each one exhibited some symptoms, but in no case were the symptoms of sufficient seriousness to cause the student to seek medical attention. The early



*Courtesy Culver Military Academy*

***A health examination is something more than a physical examination.***

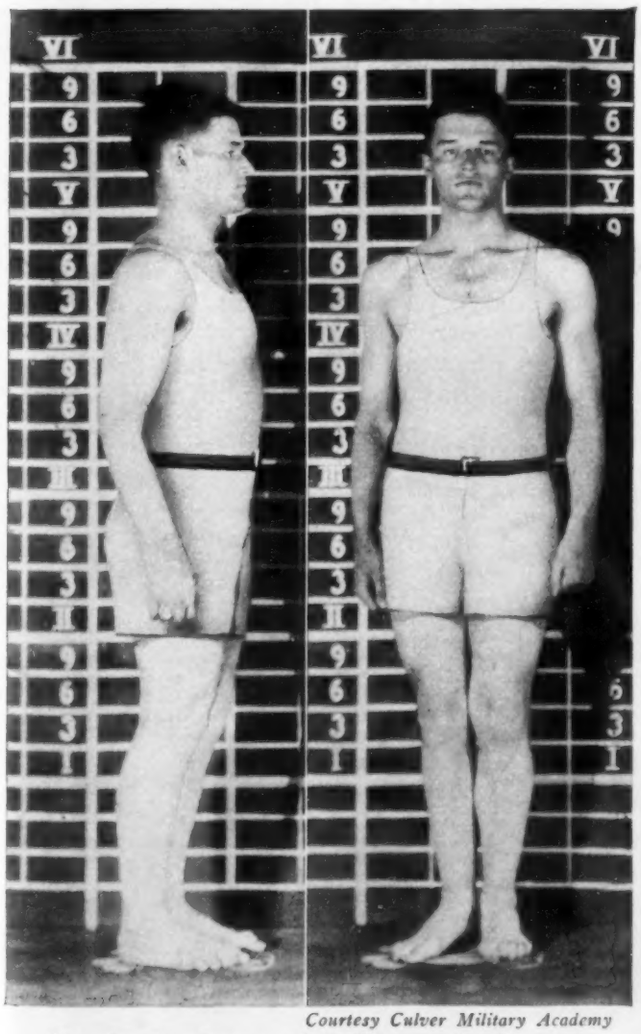
diagnosis and treatment of these few cases in itself would be sufficient justification for having conducted the examinations.

To enjoy the maximum of physical and mental health, one needs to be free not only from major diseases but also from minor defects and from injurious habits of life. Defective vision will never cause death but, uncorrected, it may cause headaches and physical and emotional strain and fatigue, which may so seriously handicap the individual that he makes a failure of his life's work and is robbed of the pleasure of life itself.

### *Impaired Hearing Often Not Suspected*

Impaired hearing always hampers one's intercourse with his fellow men and may produce emotional conflicts to the extent of making a person seclusive and asocial. In the examination of students of Minnesota tests of hearing acuity, secured by means of an audiometer, revealed that 2.8 per cent had defective hearing; few of them were aware of the condition.

Some of the other minor defects revealed by these examinations and the frequency of their occurrence were as follows: goiter, 5.2 per cent; anemia, 16.6 per cent; underweight, 19 per cent; overweight, 13.2 per cent; nasal obstruction, 3.7 per cent; dental caries, 4.6 per cent; pyorrhea, 1 per cent; hernia, 2.1 per cent; recurrent appendicitis, 0.6 per cent; constipation, 6 per cent; hemorrhoids, 2.9 per cent; acne vulgaris, 9.6 per cent; faulty posture, 6.7 per cent; flat feet, 3.3 per cent; nervousness and intensity, 2.6 per cent; migraine, 1 per cent. Correction of many of these defects or the habits that produce them is resulting from the advice given by the examining physicians.



*Courtesy Culver Military Academy*

***In schools where real health examinations are given, they are appreciated by the students.***

On the health examination blanks used at the University of Minnesota the following questions appear: What are your pleasures and recreations? Are you subject to worry and moods; to periods of alternating gloom and cheerfulness? Are you particularly self-conscious? Are you inclined to be secretive and seclusive? Are you ever bothered by the feeling that people are watching you or talking about you? Has there been any nervous disorder in your family; if so, what was its nature and who was affected? Do you wish to discuss confidentially any question in regard to your health, family history, sex or personal habits with a physician?

### *Correcting Mental Maladjustments*

The replies to these questions frequently lead to the frank discussion of the student's personal problems, worries and maladjustments. Most of these problems are such that the examining physician can discover the underlying cause and give the necessary advice in mental hygiene, but the few more complicated problems are referred to a psychiatrist. Most neurasthenia, emotional instability and social maladjustments originate in childhood and the establishment of child guidance and behavior clinics throughout the country is evidence that the importance of correcting these unhealthy conditions as early as possible is generally recognized. The proportion of children, however, who can have the advantage of expert advice is so small that most children so disturbed must make their own adjustments or enter adult life hampered by maladjustments and neuroses. College health examinations may be the means of making contact with many young persons who need advice and in many cases may present an opportunity for assisting the students to make better adjustments in life and to free themselves from worries and feelings of excessive inferiority. If neglected until later life, many of these unhealthy mental and emotional habits become so firmly established that little or nothing can be done to change them.

Probably the chief reason that health examinations have not been particularly emphasized for young adults is the general belief that at this age such examinations are unnecessary.

Another important reason is the belief that boys and girls are carefree, living only in the present and entirely uninterested in such procedures as periodic health examinations. On this point the experience in the examination of seniors at the University of Minnesota throws interesting light. These examinations were required of every student in one of the professional schools, 431 in number, and were offered to seniors in the other departments of the university, 923 of whom took advantage of this service.

### *Students Sent Questionnaire*

Every possible effort was made by the physicians in charge to have the examinations well done, individualized and thorough, one hour of the physician's time being allowed for each examination. This was in addition to the time required for laboratory work, hearing and vision tests, weight and height measurements, and consultations. At the end of the year the following letter-questionnaire was sent to each student who had been examined:

1. Did this examination discover any physical defects or abnormal condition which you did not know existed?
2. Did it impress upon you the importance of any physical defect or abnormal condition which you have?
3. Did it relieve your mind of worry concerning any physical defect or abnormal condition which you have or which you thought you had?
4. Did it call to your attention any habits, bad from the point of view of health, which you have been practicing?
5. Was the advice given you understandable?
6. Was it sufficiently detailed and concrete?
7. Do you feel that the advice given will be of value to you?
8. Are you following the advice given?
9. How frequently do you think students should receive such examinations?

Six hundred and eighty-four students replied to this questionnaire. Of these, 15.6 per cent stated that the examination discovered some physical defect or abnormal condition which previously they did not know existed; 37.7 per cent replied that it impressed upon them the importance of some physical defect or abnormal condition of which they had been unaware previously; 39.4 per cent stated that it relieved their minds of worry about some physical defect or disease existent or suspected; 28.3 per cent stated that it called their attention to bad health habits; 83 per cent stated that they felt the advice given by the physician upon completion of the examination would be of value to them; 77.1 per cent stated that they are following the advice given.

### *Yearly Examination Favored*

In reply to the question as to how frequently students should have such examinations, 6.7 per cent replied, every six months; 76.9 per cent, every year; 12.2 per cent, every two years; and 2.9 per cent, every four years. In other words, 83.6 per cent, after having had these examinations, stated that they believed that every student should have an examination at least once a year.

Responses and results such as these give no basis for the belief that health examinations of young persons are unnecessary or unappreciated. On the other hand, at this period of life they should be especially valuable in order to discover early physical defects and incipient diseases, to correct bad habits of living, mental as well as physical, and to establish a habit of health examinations to be continued in later life.

*The original home of the Baltimore College of Dental Surgery, in 1840.*

# The World's First Dental College

*By*

## Stanton A. Tiernan

AN ACHING tooth in the mouth of a young architect led to the establishment of the first college of dental surgery in America. This fact was brought into prominence last October in connection with the alumni reunion of the Baltimore College of Dental Surgery, at which time a new building was dedicated.

In 1795, Horace H. Hayden, then living in Hartford, Conn., required the professional services of a dentist, and he sought the famous John Greenwood of New York City. Impressed with the skill of this dentist and with the possibilities of the art, he decided to abandon the study of architecture and to take up dentistry. He at once procured such books and essays as were then available, and with the energy that was characteristic of him commenced his studies.

When 31 years old—that is, in the year 1800—Hayden came to Baltimore, rented a room and made known that his services as a dentist were at the command of the public. The records show that he soon made a success, the people quickly appreciating his skill and painstaking (sic) work. That his scientific attainments were also recognized by the medical profession is best shown by the fact that, in 1837, the honorary degree of Doctor of Medicine was conferred upon him by both the Jefferson College of Medicine of Philadelphia and the University of Maryland.

Prior to this, in 1814, he took an active part against the attack of the British in the Battle of North Point.

Almost from the time he began the practice of his profession in Baltimore, he held classes in his office at night with no light but the tallow dip. Among his later students was Chapin A. Harris, born at Pompey, Onondaga County, New York, in 1806. Under the guidance and influence of Hayden, Harris soon became imbued with his teacher's views as to forming a college of dentistry, and being younger, was able to take a more active part in applying for and obtaining the charter for such an institution. This was granted Feb. 1, 1840, under its still existing name of the Baltimore College of Dental Surgery, by the legislature then in session at Annapolis.

Two days later, the first official faculty meeting was held at the house of Dr. Hayden, at which he was elected president and Dr. Harris dean.

Five students were enrolled and the first course of instruction was given in the winter of 1840-1841. The lectures were delivered in a small room, situated at Hopkins Place near Baltimore Street, marked with a tablet during the recent exercises as being the birthplace of dental education. But the teaching of practical anatomy demanded privacy and other prudential considerations also suggested the use for that purpose of a secluded stable. That even

this caution was not always sufficient to avoid molestation is shown by the records of the University of Maryland of a slightly earlier date. These recount that on the occasion of one of its removals, a rumor was current that several corpses were hidden in the cellar of a negro market man. The police were sent to investigate, and finding the negro the only one on the premises, apprehended him. It was only by appeal to the faculty and students that the supposed murderer and ghoul was finally released from custody.

### *"Sustained Satisfactory Examinations"*

Lectures were delivered and practical instructions given to the class from Nov. 3, 1840, to the latter part of February, 1841. The minutes show that two of the students were entitled to come up for graduation; "each having defended a thesis and sustained a satisfactory examination, they were admitted to the degree of Doctor of Dental Surgery."

This degree was conferred by Dr. Hayden at the first commencement held on March 9, 1841, at the assembly rooms.

As, according to the charter, any reputable dentist could apply for an examination even without having been a student of the college, many practitioners from other cities availed themselves of this opportunity to secure the much desired title of D.D.S.

Most of the applicants gave satisfactory evidence of their proficiency and received a diploma, but this was by no means always the case. Thus we read in the minutes: "Dr. S., a practitioner of dentistry of fourteen years, was admitted to examination for the degree of D.D.S. and rejected as altogether unworthy of the honor, as he showed no acquaintance whatever with the science of dentistry, being nothing but a dentist mechanic."

While from the beginning both theoretical and practical instruction was given, the facilities for the latter remained rather limited until, in 1846, the college found a better home in a building situated on Lexington Street near Calvert. Here the first dental infirmary was established.

All these facts show that the faculty was wide awake and laboring faithfully in making the course of instruction more thorough. That their efforts were duly appreciated is best indicated by the constantly growing number of students enrolled. While, in 1841, only two, and a year later, only three men were graduated, the number increased rapidly, so that, in 1851, eighteen students received their diplomas at the commencement exercises.

From then on the Baltimore school, yearly larger, has exercised through itself and its alumni a remarkable influence on the progress of dentistry throughout the country; it was the forerunner and prototype of dental schools that were gradually established in other American cities. Indeed, aided and supported by these younger sister institutions, it can truly be said to have contributed its full share to the making of what is today recognized as the superiority throughout the civilized world of the American dentist.

### *Museum Is Renowned*

The museum of the college is justly renowned. Here are found artificial dentures representing the successive stages through which this branch of the profession has progressed up to the comparative perfection of the present time.

Among these exhibits is the famous set of teeth of carved ivory made for George Washington by the same John Greenwood, who by relieving the aching molar of Horace H. Hayden prompted that young man to take the first step that recently culminated in the dedication of the new building of that "alma mater of alma maters," as it has been termed, the Baltimore College of Dental Surgery.

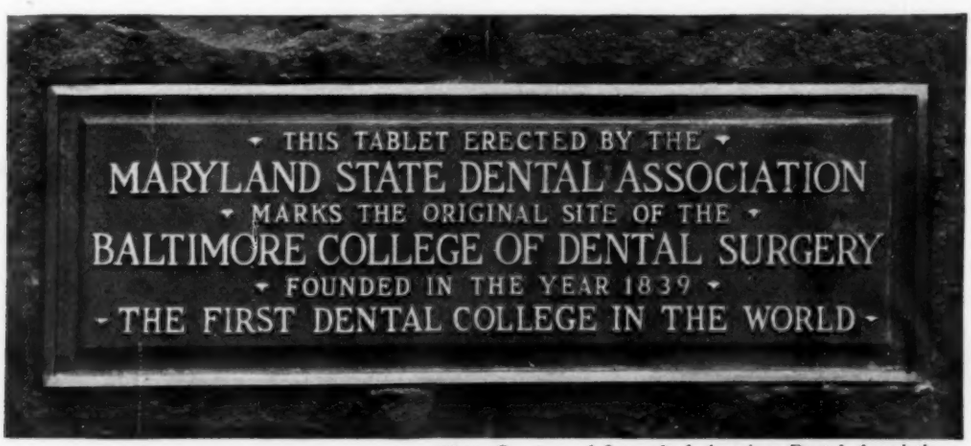

THIS TABLET ERECTED BY THE
MARYLAND STATE DENTAL ASSOCIATION
MARKS THE ORIGINAL SITE OF THE
BALTIMORE COLLEGE OF DENTAL SURGERY
FOUNDED IN THE YEAR 1839
THE FIRST DENTAL COLLEGE IN THE WORLD

*Photo Courtesy of Journal of American Dental Association*

***The tablet which marks the site of the world's oldest dental college.***

# SIMPLE LESSONS *in* *Human Anatomy*

*By B. C. H. Harvey*

Lesson XI

THE BLOOD AND ITS CIRCULATION

THE BODY'S TRANSPORTATION SYSTEM

IN ANY great community of people good transportation systems are essential. They must be abundant and efficient if the community is to be populous and prosperous. The blood and blood vessels constitute the common carrier of the human body. The transportation lines are the blood vessels and they have a total length of more than 100,000 miles in one adult man. There are more than 60,000 miles in the muscles alone. They serve a total population of about 27 million million individuals, for that is the number of separate living cells associated together to make one adult body.

Of these, more than 23 million million work on the transportation system. It carries food and oxygen to every part of the body and puts it down within the reach of each individual cell, even those that live and work in remote and apparently inaccessible regions. It carries from each cell carbon dioxide and the cell's special product and its waste. Also it carries the mails (hormones).

It is an unusual transportation system in four great fundamental respects.

First, it is submarine, totally submerged in salt water. Life began in the sea. When animals crawled up on the land there was air around them, but they brought the sea inside them. More than 85 per cent of the weight of the human body is water—salt water, sea water. All our cells continue to live in it.

Second, it consists entirely of tubes, a vast, continuous network of of them.

Third, it does not run separate trains. All its lines are filled by one continuous, ever moving, circulating train, the blood. Goods and mails and passengers get on and off without a stop. Goods and mails go through the tube walls in solution; the passengers crawl out making little holes which close up after them.

Fourth, it needs no lights; all its work is done in the dark.

Fifteen pints of blood fill the blood vessels of an adult man and constitute the ever circulating train of our transportation system. It is made up of blood fluid, or plasma, and blood cells. The fluid carries food, hormones and cell products in solution; it is constantly receiving them or giving them up, and so it is constantly changing in composition. The blood cells are of two kinds—red and white—and they have very different functions.

The red cells are 23½ million million in number. They are the special carriers of oxygen and carbon dioxide. Each one is shaped like a doughnut with a membrane across the center (fig. 101). The diameter is $\frac{1}{3,000}$ inch, the thickness about one-fourth the diameter. They give the red color to the blood but are not themselves red except when seen in large numbers. Individually they are orange yellow. They have no nuclei, for they lose them early in their careers, and so they are imperfect cells and cannot live long. Three weeks is their maximum life time, so about one million million of them die every twenty-four hours and have to be disposed of and replaced. During embryonic life they are formed in the liver and also in the spleen. In the adult they are formed in a special part of the connective tissue; namely, the bone marrow.

The site of their formation lies outside the blood vessels of the marrow, and anatomists have been much inter-

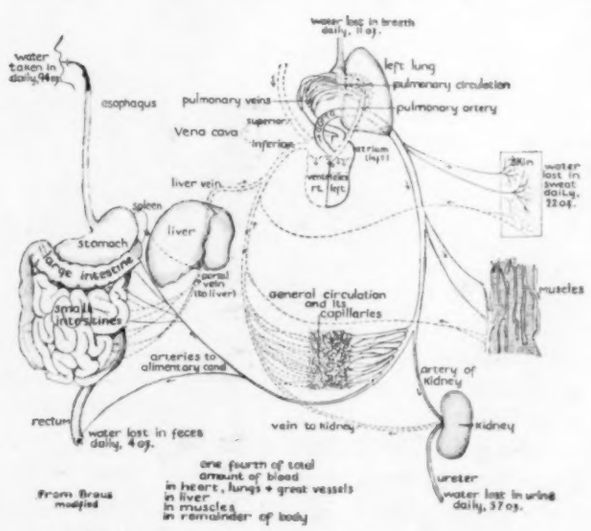



*Fig. 100.—General plan of blood circulation, modified from Braus. The amounts of water taken in and lost in a day are from measurements in a special case.*

ested in how they get in against the pressure; for they are incapable of active movement.

The late Prof. Alexander Maximow and his students recently showed how they get in. In the interior of bones the capillary tubes expand into large irregular sacs, which occupy the spaces of the spongy substance (fig. 102). In section they look like lakes with irregular rocky shores. The young red cells are formed in great numbers in these bone spaces and lie just outside the blood sac. When the growth pressure becomes very strong in one spot, they break through the wall and many are projected into the blood stream. Many thousand millions get into it every day in this manner. It must be remembered that the wall of the sac is alive and helps. It becomes thin where the outside pressure impinges on it, and after the mass of reds has broken through, the adjacent wall cells grow rapidly together again and so close the opening.

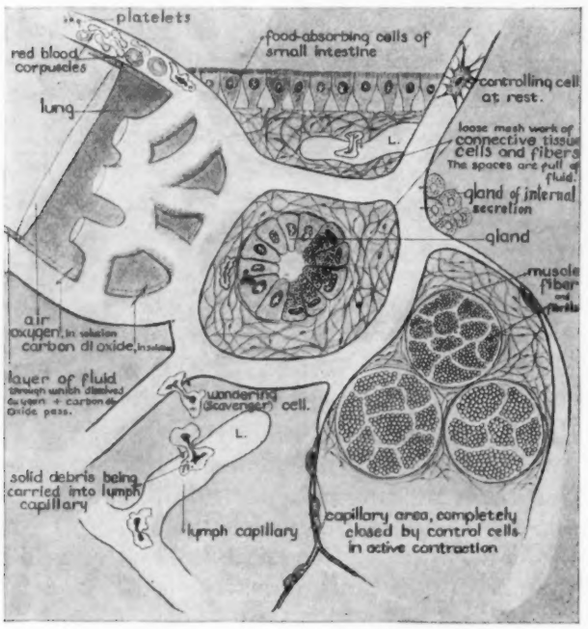



*Fig. 101.—Diagram showing relation of capillaries to tissue. Blood cells and platelets are shown only above and at the left. Actually they fill all the space in the capillaries. The diagram indicates how the blood gets oxygen from the lungs and food from the intestines. It gives them up to muscles, glands and other tissues, taking from these tissues carbon dioxide and waste. It carries the carbon dioxide to the lungs, where it gives it up.*

When the red cells die, their bodies are carried to the spleen. The spleen is the graveyard of the red cells and many millions are buried there daily. They are broken up chemically, and the resulting chemical substances are forwarded to the liver (fig. 100), where they are stored and then used over again for other purposes. Thus all of us, even vegetarians, are consumers of animal cells—our own cells.

The white blood cells are less numerous in the ratio of 1 to 666, so the blood contains only 33 thousand million of them. There are six varieties and all have nuclei. Many are much larger than the red cells (fig. 101w), and they are capable of slow, independent movement. They are strongly attracted by bacteria, which they eat and digest if the bacteria get into the blood vessels. If the bacteria are outside in the tissue spaces, they crawl through the capillary walls to get at them. These are the passengers (police) who make holes between the wall cells. As soon as they get through, the wall cells close up the holes after them. When outside the blood vessels they are called wandering cells (fig. 101).

In diseases caused by bacterial infection, the number of them in the blood is often doubled and tripled, so the number of white cells in the blood count (made from a few drops of blood) is an important aid to the physician in making a diagnosis.

If the bacteria are especially numerous or venomous they may kill the white cells, even when great numbers crawl out of the capillaries to attack in force. The resulting mass of dead bodies is called pus. Bruises often break or tear the delicate capillary walls. Then both white and red cells get out. The red ones die and make the discoloration which follows bruises; the white cells, being police and scavengers, help the local connective tissue cells to clean up the area.

White cells are formed outside the blood vessels in the connective tissue, in the lymph glands and in the bone marrow. Some of them get into the blood stream along with the young

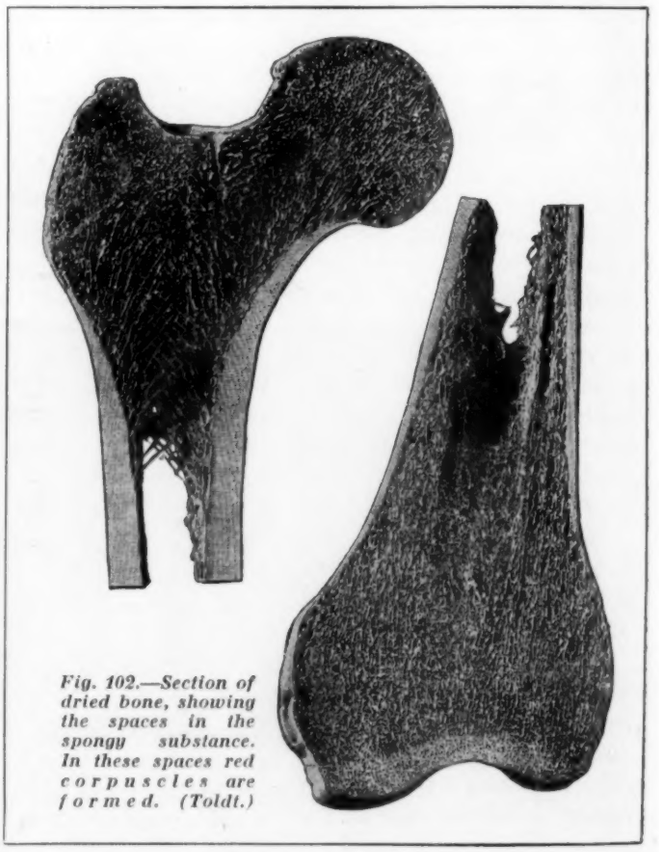


*Fig. 102.—Section of dried bone, showing the spaces in the spongy substance. In these spaces red corpuscles are formed. (Toldt.)*

red cells in the bone marrow; most of them get in by a wonderful mechanism called the lymphatic system, which will be described a little later.

When the white cells die, and they do not live long, their bodies are broken up where they happen to be—in the blood vessels or tissue spaces—and the parts are eaten up by other white cells, by connective tissue cells, or by the cells of the capillary walls. In the wide capillaries of the liver, spleen and bone marrow the wall cells are especially active in eating up such fragments.

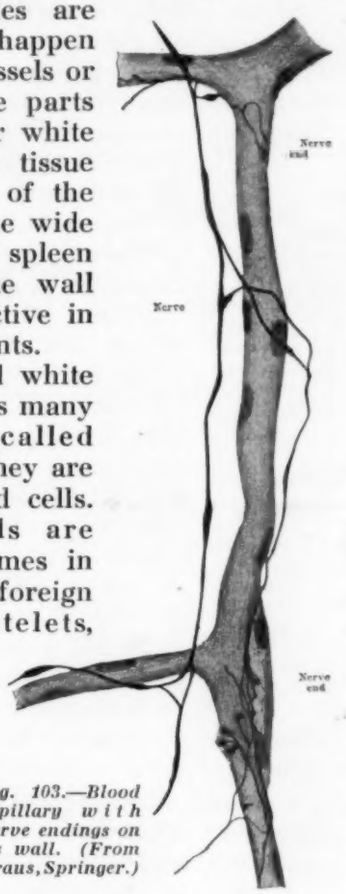



*Fig. 103.—Blood capillary with nerve endings on its wall. (From Braus, Springer.)*

Besides the red and white cells the blood contains many million tiny bodies called platelets (fig. 101). They are smaller even than red cells. When blood vessels are broken and blood comes in contact with air or foreign substances these platelets, with the help of some white cells and the blood fluid, form fine, waxy filaments. These become entangled into a sticky felt called a clot, which becomes adherent to the edges of the tear and to everything else in the vicinity. This closes the leak. It would be difficult to put a patch on a hole in the garden hose while the water is turned on, but the circulating blood patches its own tubes promptly and surely, if the hole is not too big.

The transportation tubes in which the blood circulates comprise the heart, the arteries, the blood capillaries and the veins. A general scheme showing something of the system appears in figure 100. In the living body every bit of space in this system of tubes is always full of blood, and it contains all the blood there is in the body. The figure shows that the heart comprises two main divisions—a right one and a left one. Each consists of two chambers: a receiving chamber above called the atrium, and a discharging chamber below called the ventricle.

If we start at the right atrium and follow the circulating blood through the system till it returns to the starting point, we can get an idea of the course of the blood stream. Arrows on the diagram indicate the direction of blood flow. It passes in succession from right atrium through right ventricle, pulmonary artery, lung capillaries, pulmonary veins, left atrium, left ventricle, aorta, all arteries (except pulmonary), all capillaries (except pulmonary), all veins (except pulmonary) and back again to right atrium. Valves permit flow only in the direction stated.

It is apparent that there are two sets of blood vessels, one for the lungs and another for all the rest of the body. We speak therefore of the pulmonary circulation and the general circulation. It will be noted that both in the pulmonary and in the general circulation the blood must go through capillaries in order to pass from arteries to veins.

### *The Capillaries*

Of all these tubes, the capillaries are by far the most important (Fig. 104). They alone have permeable walls, and it is through their thin walls that all the loading and unloading of the blood stream takes place, all the exchange between the blood and tissue fluids. Their thin walls are in some respects like tubes of filter paper.

If a filter paper is put in a funnel and the funnel put in a glass beaker, as in figure 105, and if then a solution of table salt is put in the funnel and distilled water in the beaker outside, the salt will pass in solution through the filter paper and will appear in the distilled water, which thus becomes a salt solution. If left for a time the salt solutions in the funnel and in the beaker will come to be of equal concentration. The walls of capillaries behave in a similar way. They are made of thin, flat cells joined at their borders. They permit solutions of salts and of colloids to go through them; but unlike filter paper they are alive and irritable,

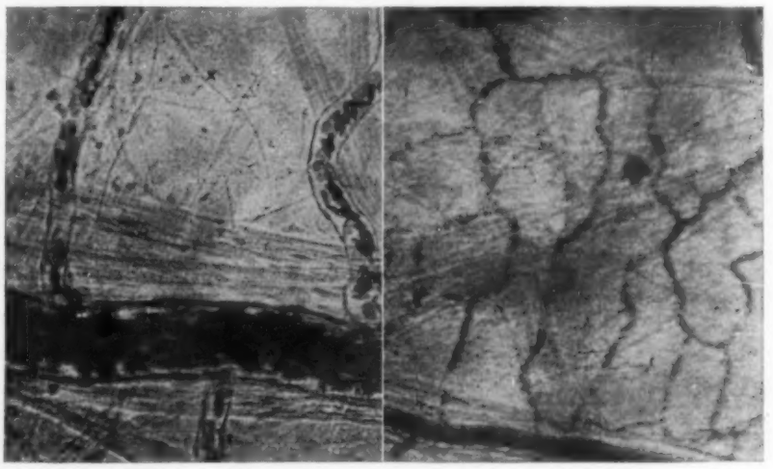


*Fig. 104.—Living blood capillaries with blood cells streaming through them. These are made from living tissue with a camera attached to a microscope. The illustration at the left (reduced from an original with a magnification of 500 diameters) shows two large capillaries and a vein and at "x" a contracted capillary. The illustration at the right (the original of which had a magnification of 180 diameters) shows a capillary network. (From Krogh.)*

and they do some things that filter paper cannot do. They help some things to pass through the wall and hinder others.

The total length of blood capillaries is about 100,000 miles, and the total area of their surface is about one acre. Throughout this large surface exchange of solutions between blood and tissue fluids is constantly going on. The relation of the capillaries to connective tissue spaces and to some tissues is clearly demonstrated by the diagram shown as figure 101.

From the air sacs in the lung the blood in the capillaries gets oxygen. It goes in solution first through the thin layer of fluid lining the air sac, then through the thin cells making the wall of the sac, then through the thin cells of the capillary wall and so into the blood, where the red corpuscles take it up. From the absorptive cells of the intestine the blood gets food. It goes in solution through the absorbing cells, into the space around their bases, through the connective tissue caverns, through the thin cells making the wall of the capillaries and so into the blood. The blood gives up oxygen and food to glands, muscles, nerve cells—all the cells of the body. These substances pass in solution out through the capillary walls through the connective tissue caverns, through the permeable walls of the cells and into their substance.

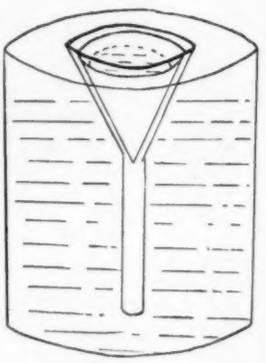


*Fig. 105.—Diagram showing how salt passes through a filter paper in a manner similar to that in which substances pass in solution through the walls of the blood capillaries.*

Similarly carbon dioxide passes in solution from the cells into the blood, and in the same direction pass also the cell products and their waste.

Thus the capillaries are tubes with thin, permeable walls located in a sea of water. It is not stagnant water, for currents flow into the capillaries and out of them, into the caverns in the tissues, into the cells and out of them. And the body cells, being alive, help; they absorb what they need and throw out what they do not need. A man usually takes in daily by the mouth 94 ounces of water. He throws out daily 11 ounces of water in his breath, 22 ounces in sweat, 57 ounces in urine, 4 ounces in the feces. All this water goes through the capillary walls and it carries dissolved oxygen and food and wastes. These currents keep the water in the spaces constantly stirred up and fresh.

The essential thing in this transportation system is that a stream of blood be kept moving through these capillary tubules. All the other parts of it—the heart, the arteries, the veins—are subservient to this essential activity. The maintenance of this flow requires much work. The capillaries being inside the body are subject to the air pressure on its surface, 15 pounds per square inch. The elasticity of the skin and compression by active muscle masses add to this pressure. Further, the walls of the capillaries are themselves alive and tend to contract upon the column of blood within them. Tiny nerve ends reach the capillaries (fig. 103) and nerve stimuli influence their contraction. Contractile cells with long arms reaching round the capillary tube (fig. 101, control cells) are able on occasion to close them up entirely.

Under the combination of all these pressures the capillaries would be squeezed flat, were there not some force constantly driving the blood through them more powerful than these external pressures and able to overcome them. That force is furnished by the heart and arteries.

*(The next paper will take up the heart, arteries, veins and the lymphatic system.)*

HYGEIA

THE HEALTH MAGAZINE

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# Plain Facts about Health and Disease

## THE LADY AND THE FASHIONS

WOMAN has been called a slave of the prevailing mode in dress. When fashion demanded a full bust and a wasplike waist, our mothers, in the days of their girlhood, had such figures. When it decreed a flat bust and an unconfined waist, our wives and our sisters obeyed the decree. But when styles in women's dress require extreme slenderness of figure, many women find attainment difficult. The conversations between women inadvertently overheard a few years ago related to husbands or children or homes. Those of today are not infrequently refusals to eat lunch or descriptions of the particular reducing diet that the speaker finds most effective at the moment.

Reduction cures, many obviously fraudulent in their claims, others dangerous because of the promiscuous use of thyroid substance, are widely advertised. The harmful effect that the long continued and uncontrolled use of thyroid substance may have on the heart is known to every physician.

Many of the procedures employed for the avowed purpose of reducing weight are ludicrous and may be harmful only in the false hopes they raise or in the depletion of the purse they cause. That the addition of some mysterious compound to the bath water should be able to cause a disappearance of body fat is a strain on the imagination. For some of the advertised procedures or drugs a high degree of selective activity is claimed, and it is asserted that the hips or some other part of the body too liberally covered by fatty tissue may be diminished while the rest of the body remains in statu quo. This, briefly, is hooey!

From the beauty shops emanate sounds painfully reminiscent of those which, in the days of the woodshed, came from that pioneer structure during probably beneficial interviews between father and son. Slapping has become the mode, the purpose of which is the selective reduction of the part of the body slapped. The castigation is done by means of a rubber hand attached to a wooden handle. The fact that women pay money to be so treated would indicate that they believe that such rubber handed slapping will bring about the desired reducing effect.

A woman who has undergone such a course of treatment may not have a decrease in the size of the hips, but she will have numerous ruptured superficial blood vessels of the skin and the result is anything but beautiful. The person who manipulates the handle end of the slapping contrivance is probably more successful in keeping down her weight than is she who gets slapped. The same handle, attached to a broom or mop and actively wielded by the woman who seeks reduction in weight, would probably be more effective than when attached to a rubber hand.

Excessive deposition of fat may be harmful. A tendency in this direction should receive attention. When the tendency is not the result of some nutritional abnormality, in which case it requires the careful study of an intelligent physician, it is usually the result of a disproportion between food intake and energy expenditure. In such cases, proper restriction of diet and an increase in the amount or degree of physical exertion are advisable.

A tendency to embonpoint is one of the penalties of advancing years, in both men and women. It is less easy for the woman of middle age to retain a girlish figure than it is for the younger woman. The normal distribution of the fatty cushions in woman is different from that in man. Attempts at reduction of some particular part of the body, except perhaps through properly selected physical exercises, are doomed to

failure. Repeated active purging or the use of drugs containing thyroid substance will cause a reduction in weight, but they are dangerous procedures unless carried out under the direction of a physician. Reduction of weight requires the active participation, in the way of diet restriction and of increased physical exertion, of the person whose weight is to be kept within reasonable limits. The physical exertion of a rubber hand slapper or the supposedly magic properties of a drug will not do the work.

## HOME ECONOMICS

THE MANNER in which our government enters closely into our lives is realized by but few. In the Department of Agriculture, the bureau of home economics is especially interested in numerous problems which have an immediate bearing on the daily life of the people. Research is constantly being carried on concerning many problems of everyday interest.

Food is one of the first considerations in the lives of all of us. The foods and nutrition division of the bureau has recently made available much information concerning food problems in a series of pamphlets concerning such subjects as "Food for Young Children," "Food for Farm Families," "Good Proportions in the Diet," "Care of Food in the Home," and "Nutritive Value and Cost of Various Foods." Special attention has been paid to problems of canning and to such common food substances as milk, rice, corn and honey.

In relation to foods no subject is so prominent in the public eye as the vitamin content. A recent bulletin of the bureau gives the vitamin content of all of the common foods. Special attention has been paid to vitamin B, now known to contain two factors—one definitely related to the prevention of pellagra and the other to a condition known as polyneuritis. Wheat germ and yeast are excellent sources of both vitamin B factors, and various preparations of yeast are now being widely used for the prevention of vitamin B deficiencies.

It is pointed out that several distributors of Japan green tea have claimed for that product special virtues as a source of vitamin C. Vitamin C is easily destroyed by oxidation and by heat and particularly by drying. The bureau of home economics made a special study of Japan green tea and was unable to find an appreciable amount of vitamin C in any of the samples.

The dietary studies of recent years have done much to vary man's diet and make available some food substances that were previously considered unpalatable. The bureau of home economics attempts tests of cooking of all sorts of meat products. For instance, chickens were roasted with the idea of setting up a standard method, but unfortunately no certain way has been found to determine when a chicken is done. Cooking experiments were also carried out on beef, eggs and pork and the material of the bureau is available concerning all these experiments.

Other problems recently considered by the bureau concerned the proper clothing for children, proper methods of laundering and the hygienic aspects of clothing. Child development, although considered to be particularly the function of the children's bureau, is also prominent in the work of the bureau of home economics.

The pamphlets and leaflets of this bureau are easily available. The circulars on vitamins in food materials, on food habits, on clothing and on nutrition and on all of the other subjects that have been mentioned may be secured merely by sending the nominal cost of about five cents each to the government printing office. Many of the pamphlets may be had without charge by addressing the bureau of home economics of the Department of Agriculture. Those who are interested in the scientific aspects of diet and hygiene in the home will do well to acquaint themselves with this material.

## THE GENEVA RED CROSS CONVENTION REVISED

LAST July representatives from forty-seven governments met with delegates from the League of Nations, the International Red Cross Committee and the Sovereign and Military Order of Malta at Geneva to consider revision of the convention governing the action of the Red Cross in time of war. The original Red Cross convention of 1864 was revised in 1906. Although the revised agreement had stood successfully the severe test of the World War there were found to be certain ambiguities remaining which have now been cleared up and certain new clauses made necessary by the scientific developments of modern warfare. Protection of the Red Cross symbol has now been legally extended to airplane ambulances engaged in the evacuation of sick and wounded or in the transportation of urgently needed medical supplies.

Formal recognition of the use of the Red Cross emblem in connection with peace-time activities is another feature of the new agreement. The red cross on a white ground may now be legally used by the authorized volun-

tary societies to indicate first-aid stations where free treatment is accorded to sick and injured. It goes without saying that this privilege must be used only with great circumspection. Both the Red Cross emblem and the arms of the Swiss Confederation, which has the same design with the colors inverted, are now protected by international law against exploitation by commercial and other bodies.

At the same meeting a second convention was drawn up dealing with the treatment of prisoners of war, a subject which gave rise to many recriminations between the combatants in the last great war. The two conventions were signed by plenipotentiaries of the United States on July 27.

## PROBLEMS OF HEART DISEASE

IN 1928 about 228 persons out of every 100,000 in this country died from heart disease as compared with 106 from kidney disease, 105 from cancer, and 100 from pneumonia. These are the four most prominent causes of death. The increasing incidence of heart disease has been insidious. During the last ten years the population of the country increased about one third, but the deaths from heart disease practically doubled and the number of deaths in which weakness of the heart was a contributing factor increased about 81 per cent.

One of the saddest aspects of this problem is the fact that heart disease attacks children particularly. Seventy-five per cent of all cases developed in children under 10 years of age. It is now generally believed that the chief factor in the development of damage to the heart is infection by an organism not certainly known which seems to enter the body through bad teeth and tonsils. Complete removal of the tonsils when they are infected may aid in preventing heart disease, but the germs may also enter by way of infected sinuses, or indeed by infection anywhere in the body. The infectious diseases of early life, such as scarlet fever, diphtheria, rheumatic inflammations of the joints and sore throats are usually to be found in the records of all of the children with heart disease.

In Great Britain epidemiologic studies have shown that heart disease is most frequent among the children in the poorer districts, particularly those living in damp, gloomy homes and with poor living conditions generally.

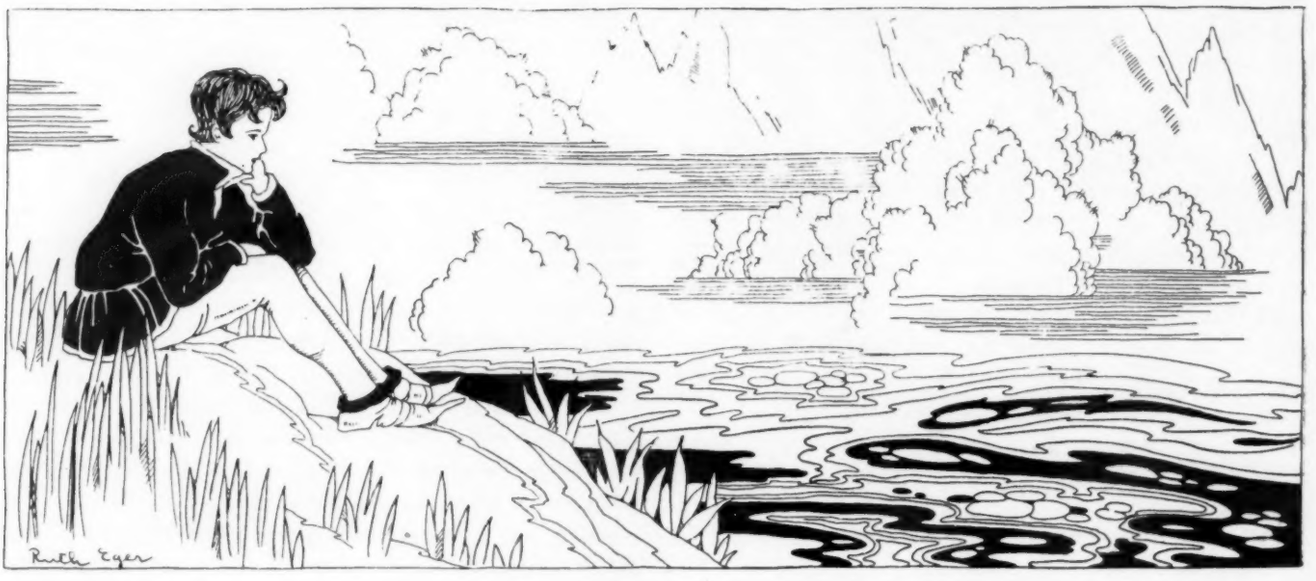
Obviously the great question is not the cure of heart disease, because once the heart has been damaged, repair is difficult and the child is likely to be a "heart cripple" for the remainder of his life. The economic, logical and scientific points of view demand greater and greater study leading toward prevention of heart disease and a lowering of the number of cases. Throughout this country as well as abroad research funds have been established for the study of this problem in the same way that special attention is being given to other great public health problems in the field of medicine. The time may come when some specific organism may be discovered and it may be possible to arrest the progress of this disease before such great damage has been done to the heart that complete recovery is impossible. Certainly these cases are such as will stir the sympathy and enlist the consideration of every humanitarian.

## PREMARITAL MEDICAL EXAMINATION

THE general health examination before marriage was first advocated as a means of checking the spread of venereal disease. Only recently has its wider significance in the field of preventive medicine been recognized. In the French speaking countries the movement for these examinations has gathered the greatest momentum, and several interesting volumes of essays have been published on the subject.

Prof. Henri Vignes remarks that to be of value this examination must be made by physicians who are both competent and well equipped; that it must involve both sexes and include an investigation of heredity. He points out also the opportunity, which should not be neglected, of research in human genetics. The recent French Congress of Legal Medicine also discussed the subject and opinion seemed to be unanimously in favor of premarital examinations, although there was difference of opinion as to whether or not they should be made compulsory.

In this country the value of premarital examinations has been urged by specialists in many fields. Whatever arguments may be advanced for periodic medical examinations in general may be used with greater force at the time of marriage, when the interest of an unborn generation is also at stake.




*Even on quiet days there was a thunder of mighty waters.*

# DONALD THE STRONG

By J. Mace Andress

ONE OF the first things that Donald could remember was the swift river that ran in front of his father's cottage. When the wind blew it was covered with white capped waves. Even on quiet days there was the thunder of mighty waters as they rushed on toward the sea.

On the other side of Whirlpool River towered lofty mountains. From the water's edge they ascended as smooth walls. Far above in the great blue were majestic peaks. They were always covered with snow. Often they could not be seen because of banks of fleecy clouds.

"Who lives across the river and beyond the mountains?" Donald asked many times. But his father and mother and the herdsmen who dwelt near by only shook their heads.

Nobody knew. Many men had sought to cross the river. Most of them in battling with the treacherous stream had been swallowed up in its rapids and whirlpools. One youth had reached the other side but he could not climb the slippery mountain wall. His boat was carried down the surging river, and he was never heard from again. It was so long ago that even his name was forgotten. He was called by everybody the Foolish Youth.

Old men whispered a prayer when they saw the river in a storm. "The good god," they said, "has set a curse upon the river. He who tries to cross it is doomed to incur his wrath, and must die. We can never know what lies beyond the mountains."

Donald helped his father herd cattle and sheep, and watched the great river. He watched it on quiet, sunny days as it rushed over the rough shallows in front of his father's house. He loved it when it was lashed into foam by the fury of a storm. Often as he played with the lambs on the hillside he watched the sun set across the river among the giant peaks. He learned to know the names of all the flowers that grew along the stream and the trees that bent over its troubled waters.

As the days went by he learned to love the river more and more. When he herded his flocks he always tried to face the river and the distant mountains. The river seemed to speak to him. The mountains seemed to call to him. "You can cross, Donald; you can cross," the voice seemed to say.

"Some day, I shall cross the Whirlpool River and climb the Mountains of the Sun," he announced boldly.

His companions sneered.

"The man who would do that must be strong. You are not as strong as any of us," and they walked haughtily up and down before him showing their strength.

"Then I shall live outdoors, breathe the pure mountain air, sleep many hours, eat nourishing food and learn to be strong," he replied defiantly.

"But such an adventure requires skill," they added. "You can't row a boat or climb mountains as well as we can. We

would not attempt it. Think also of the story of the Foolish Youth. He had skill, but even he was lost."

"Day by day, week by week, month by month and year by year, I shall train myself until I can row and climb better than anybody else."

"Ah," said a serious-faced youth, "you must have great courage. Think how tired you will become battling with the waves that are always ready to swallow you up. Then think of the courage you must have to climb yonder walls," and he pointed to the mountains. "You must not get dizzy or faint and you must believe in yourself even when your foot slips above an awful abyss."

Donald paused for a moment and gazed thoughtfully across the sunlit river and wicked whirlpools to the lofty peaks. He had such a look upon his face that for a minute his boisterous companions forgot to jest. Donald had apparently forgotten their presence. Then he smiled and a light glowed in his gray eyes.

*"Then you will forget about the poor peasant girl Hilda."*

"I have no fear," he said. "I shall train myself to do hard things until they become easy. God is good."

"Yes, but it is silly to attempt it," said another, "for everybody has failed. God meant that the River of Whirlpools and the Mountains of the Sun should forever remain unconquered."

"But I shall succeed where others fail," asserted Donald calmly. "The river and the mountains call to me. I shall prepare myself for the great adventure. I shall succeed."

Time traveled on, and Donald dreamed and dreamed.

When he first revealed his innermost thoughts to his father and mother, they laughed good-naturedly at the idea.

"How could he who had been so pale and sickly all his life expect to do that which had been denied the strongest and the bravest?" they asked him.

From babyhood Donald had been so weak and often so ill that few expected him to live. It was only due to his mother's love and his father's sympathetic care that he had lived. He had never been called upon to do hard work. He played when he pleased and helped his father with the cattle and sheep only when it suited his childish whims.

There was only one of his companions who listened with glistening eyes and bated breath while he told of his hopes and dreams. Her name was Hilda. She was a fair maiden with golden hair, pink cheeks and a delicate mouth. Her father was a shepherd, too, and ever since early childhood she and Donald had played together.

One evening they were sitting on a rock at the river's edge looking out upon the quiet mountains in the hazy golden mist of the late afternoon. How far away and how mysterious those distant peaks seemed!

"Hilda, some day I shall visit that distant land beyond the mountains," Donald said. "Perhaps I may win fame and fortune."

"God grant that you may," said Hilda fervently.

"Perhaps when I return I may live in a great castle like a prince."

"Then you will forget all about the poor peasant girl Hilda." Her lips quivered just a little at the unhappy thought.

"Nay, not so," exclaimed Donald, seizing both her hands in his. "Will you live in the grand castle with me and be my princess?"

"Indeed, I will," she replied shyly. "I believe you will succeed," she said firmly, but when she thought of the danger that lay between him and that far away sunset land there was a sudden pain in her heart.

"Oh, Hilda," Donald whispered, "how proud I shall be of you!" And he drew himself up straight and tall like a real prince.

The very next morning Donald surprised his father and mother at the breakfast table by saying, "Father need not help with the cattle

any longer. I am beginning to be a big boy now. I can manage them myself."

In vain did they try to change his mind. They reminded him of his weakness and his youth.

To all these things he replied by saying, "I am no younger than other boys who herd cattle. I am much stronger than I used to be, and I am getting stronger every day."

In the end, with some misgivings, the parents consented and Donald became a real herdsman. Looking after his flock among the hills and mountains he lived day and night in the crisp mountain air. In good weather he slept in the open air with nothing above him except the blue sky. He learned to know the stars and looked for them every night like old friends. Milk, coarse bread, fruits and vegetables became his food. He became tanned by the sun and wind. He grew strong in muscle and mind.

Donald spared himself nothing that required skill and courage. Nothing was too difficult for him. He learned to dig in with fingers and toes and climb the steep mountain sides. When his herd was attacked by wolves he engaged them in a hand to hand struggle, slew some of them with his hunting knife, and drove the others away. At odd times when his father took charge of the cattle he busied himself with a boat. He learned to run rapids and falls and pull up stream against the strongest current. Nobody else in the surrounding country had such daring and skill.

*Two horsemen in glittering armor drew up in front of the cottage.*

As he took care of his herd, Donald studied the mountains on the other side of the river. With his keen eyes he traced a dangerous path over which he felt certain that he could climb. He also studied the river with care. He learned the rocks, eddies, falls and currents. Little by little he figured out the exact route that he must take to reach the base of the mountain where his imaginary path was to begin. He made a map of his route on bark and committed it to memory until he knew it as well as his own name.

The time was coming, as he knew, when he would start on the great adventure.

Meanwhile his strength, skill, daring, courage and wisdom had made him well known to the countryside. He was admired for his courage, envied for his strength and loved for his kindliness and sense of justice. People began to call him Donald the Strong. His fame gradually extended beyond his own neighborhood through all the kingdom.

Since that day when he had announced to his boy companions his ambition to cross the river and scale the mountains beyond, he said nothing more to them about the great craving of his soul. For a time his companions when they saw him taunted him about what they called "the great adventure," but Donald bit his tongue and said nothing. As they learned to appreciate his strength and power their admiration grew and their contempt disappeared until it became no more than a faint memory.

Occasionally one of them, after he had witnessed an especially daring feat of Donald's, was heard to say: "If anybody ever does cross the Whirlpool River, it will be Donald the Strong."

Day by day, Donald dreamed, studied and worked. He still heard the voice which became louder and clearer. "You can cross, Donald; you can cross." He waited patiently for the day when he would pit his power against that of the river and mountains. When that time would come he did not know.

One morning when he was sitting at the breakfast table with his mother they heard the sound of trumpets. Presently two horsemen in glistening armor drew up in front of the cottage.

"Is this Donald the Strong?" asked one of them dismounting.

"Yes," said Donald, bowing low before him.

"I come from his majesty the king," announced the courier. "He wishes this letter delivered into the hands of the king beyond the Mountains of the Sun. Our king sends his greetings and bids you report on that distant land. Ere the moon kisses yonder mountain tops you must be across the river."

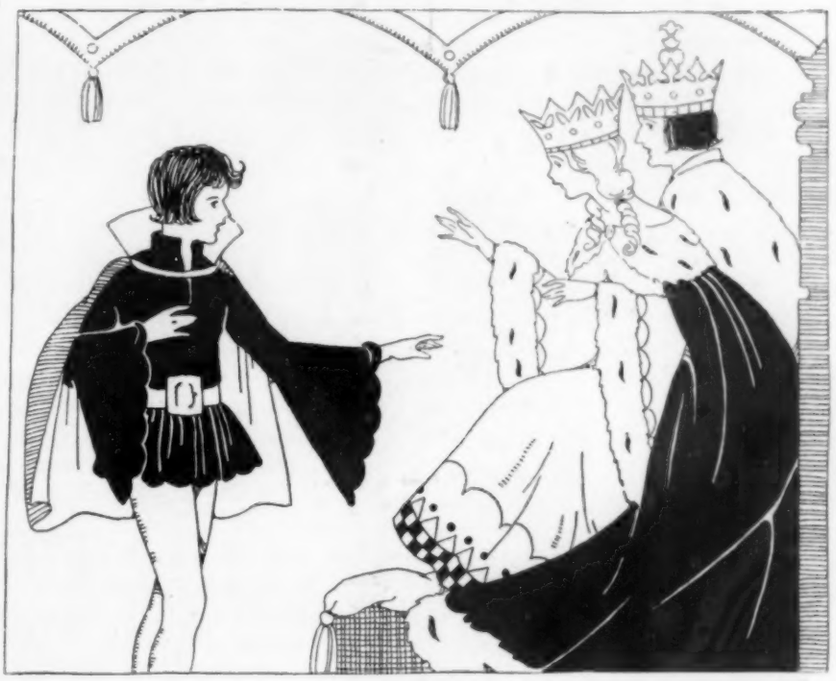
The courier handed Donald the letter.

Again he bowed very low.

"It shall be as his majesty wishes," he said gravely.

At last the hour had come. The king's letter was safely tucked into his belt. He kissed his mother good-by, shook hands with his father and friends, whispered endearing words to Hilda and hastened to his boat. It was a beautiful boat which he himself had long been making in preparation for the great adventure.

It was a beautiful summer's day. The river seemed unusually quiet, and the mountains loomed clear and blue in the background. The only cloud in the sky was a silver one no bigger than a man's hand drifting lazily across the highest peak. As he looked it seemed to change and grow into the shape of a human hand.



*Donald delivered the message to his own king in the palace.*

"It is a good sign," said Donald. "The hand beckons me to start on this glorious journey."

At first all went well. Controlled by well trained hands the boat shot out boldly into the stream. Then he appeared to be in difficulty. The boat was in the rapids and was being tossed about like a leaf.

"He is lost," groaned the people.

"No," cried Hilda. "He has counted on this. See, he is pulling through."

Even as they gazed the boat shot out safely into smoother water. Those who were watching breathed a deep sigh of relief.

Suddenly they were startled by a peal of thunder. They had been following Donald so intently with their eyes that they did not notice the approach of a storm. The wind was rising. The waters began to be white foam as the fury of the tempest increased.

Donald was now approaching the mountain wall. He was trying to land but was being swept down the stream.

"He is surely lost now," cried the people.

"No, not so," said his mother earnestly. "He has counted on that. There is more than one place where he may land."

The mother was right, for the next moment Donald had run his boat into a tiny inlet and fastened it. It was hard to see. They strained their eyes, but the little black dot moving up the face of a cliff showed that Donald was starting safely on his journey.

Meanwhile the storm was rising. The wind blew harder and harder. Lightning flashed, thunder rolled and mists gathered around the mountain tops and mists hung over the river. Rain fell in torrents and the river rushed madly on. It began to grow dark. Still during a flash of lightning they could see the little black dot moving slowly up the face of the mountain wall. At last the fog settled in until the mountains and even the river were invisible.

"Now he is lost forever," groaned the people in anguish.

"No, I am certain he will succeed," said the boy's father confidently.

"He is strong and unafraid," added Hilda. "He neither fears the storm nor other dangers along the way. He is prepared to meet them all."

There was no sleep that night. The wind howled, the rain fell and the wicked river thundered on as if anxious to add to the terror of the folk along the shore.

Morning broke fair and clear. There was no sign of a storm. Neither was there any sign of Donald. For days and days they watched the foam-flecked river but no Donald appeared. Finally most of them gave it up. Donald was just another of the foolish youths who had been sacrificed to the Whirlpool River. How true was that ancient tradition which said that there was a curse against the river!

Only Donald's father and mother and Hilda still believed that he was safe and would return, but as the time went by and week followed after week even they began to have misgivings. After all, there might be some truth in the old tradition.

Then one day they were awakened from their fears.

"Donald is coming! Donald is coming!" shouted a shepherd running along the road leading to the village, and so he was. Out in the middle of the river he was battling with wind and waves, but steadily he drew near the shore. Donald's friends shouted themselves hoarse. His parents wept for joy and fell on his neck. Hilda blushed as Donald kissed her tenderly on the cheek.

Donald explained his long absence. It had been a long and perilous journey to the kingdom beyond the Mountains of the Sun. Not only were there high mountains but also sharp and jagged rocks and precipices. Once he was attacked by wild beasts. On another occasion he had been imprisoned by robbers. He managed to escape and finally reached the king of that distant land. There he was royally received. The king and court celebrated his arrival for many days. His message had been graciously received. On his return a detachment of the king's body guard had accompanied him on part of the return journey.

"I have a message for my own king," he said, "and I must hasten on to deliver it."

The rest of this story is still told around the firesides of that country on winter evenings. Donald delivered the message to his own king in his palace. He told him in glowing language about the wonders of distant lands and the kindness with which he had been entertained there.

The queen and attendants were greatly struck by his fine figure and noble bearing. The king was so delighted with him that in the presence of the many fine ladies and gentlemen of his court he drew his sword, bade Donald kneel before him, struck him lightly on the shoulder with the sword and said: "Master Donald, your bravery and service to your king and country shall be rewarded, I dub you knight."

The king built for Donald a beautiful castle on the top of one of the mountains overlooking the Whirlpool River, and gave him many chests of gold and silver. Then Donald dressed in royal splendor set out in a coach drawn by six white horses to see his father and mother and Hilda.

"Hilda," he said with a touch of sadness in his voice, "princes are born, not made by royal decree. I cannot make you a princess but I can make you Lady Hilda."

"You did not need to offer me titles, Donald," she said, "to gain my love. I loved you just as well when you were just Donald, the boy of sweet dreams and visions."

"Then let us invite the guests to the wedding," said Donald.

Soon the wedding bells were ringing merrily.

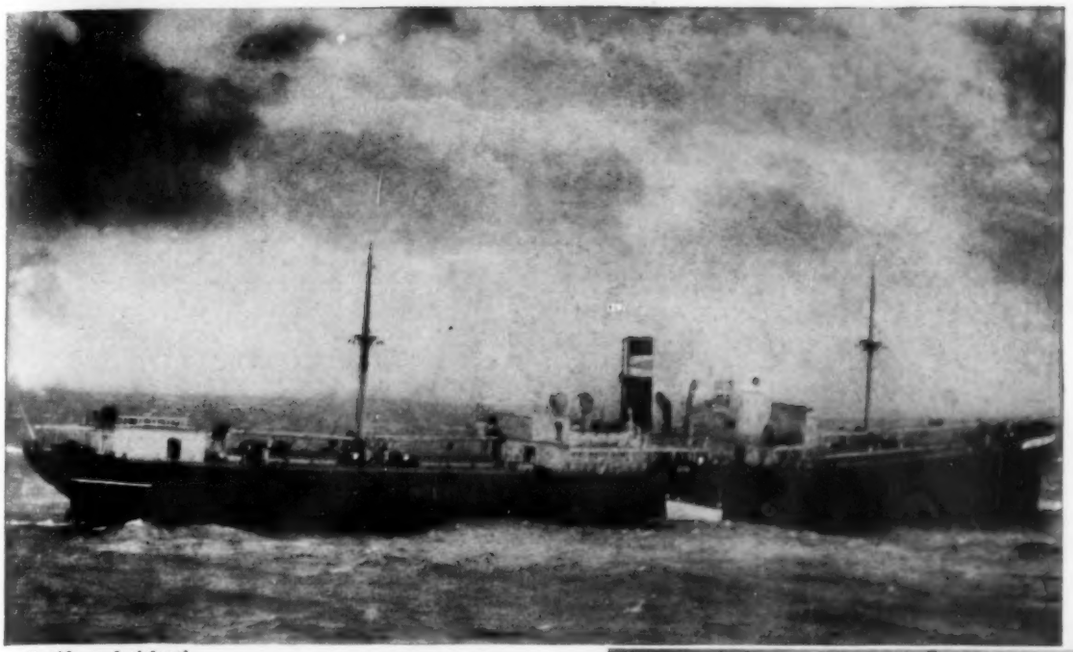
"Long live Sir Donald, our courageous knight, and Lady Hilda, his gracious wife," cried the assembled throng.

. . . . .

This great adventure happened long ago. Sir Donald and Lady Hilda are now no more. Even the castle has disappeared except for a few ruins overgrown with shrubbery.

Since that long ago great changes have occurred. Great bridges span the river and it has been made safe for passenger steamships. Often as the powerful ships run the rapids passengers may be seen at a certain point on the upper deck scanning the rocky wall along the shore. High up above them may be seen the word D-O-N-A-L-D carefully chiseled. Tradition says that when Donald the Strong was returning from his perilous journey he left his name above the surging river as a sign of his conquest. There it stands, and will probably continue to stand as a reminder of that brave youth who would not be defeated.

A new legend grew up in that land. It was the legend of Donald the Strong, who taught the world that both the Whirlpool River and the Mountains of the Sun could be conquered. It was a favorite saying of Donald's that "he who conquers himself may conquer the world."



*Pacific and Atlantic*

## *SURGERY AT SEA*

Being transferred from one ship to another in midocean to have an emergency operation for appendicitis was the unique experience of C. C. White, radio operator of the freighter, *Eldena.* The picture above shows the lifeboat being lowered from the *Eldena* to take the sick man to the hospital on the *President Roosevelt.* The request to the *Roosevelt* was transmitted by radio.

*Pacific and Atlantic*

## *MOVABLE CLINIC*

The medical director of the city schools in Los Angeles takes his office with him on his rounds. The picture above shows the interior of the "healthmobile," a complete hospital unit built on a trailer-truck chassis.

*Underwood and Underwood*

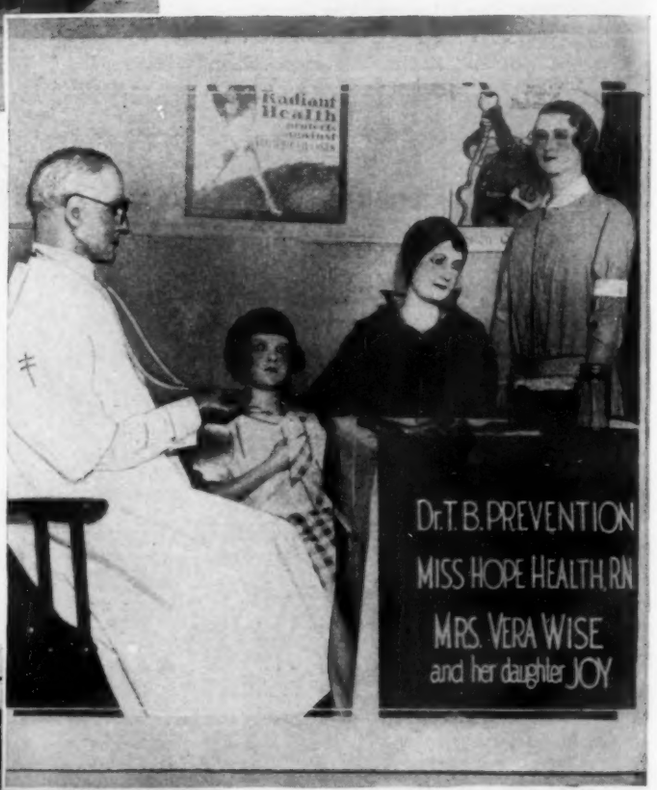
## *GOOD TURN*

Soap and water and plenty of it makes a healthy head of hair, says this Girl Scout, whose good turn one day was to help her little sister wash her hair.

*International News*

## *MADAME CURIE VISITS UNITED STATES*

Madame Marie Curie, who with her husband first isolated radium, was presented with $50,000 to purchase a gram of the precious substance for use in her work. The famous woman scientist was photographed with a group of friends at a dinner given by the American Society for the Control of Cancer. She is seated nearest the microphone.




*International News*

## *SEE YOUR DOCTOR EARLY*

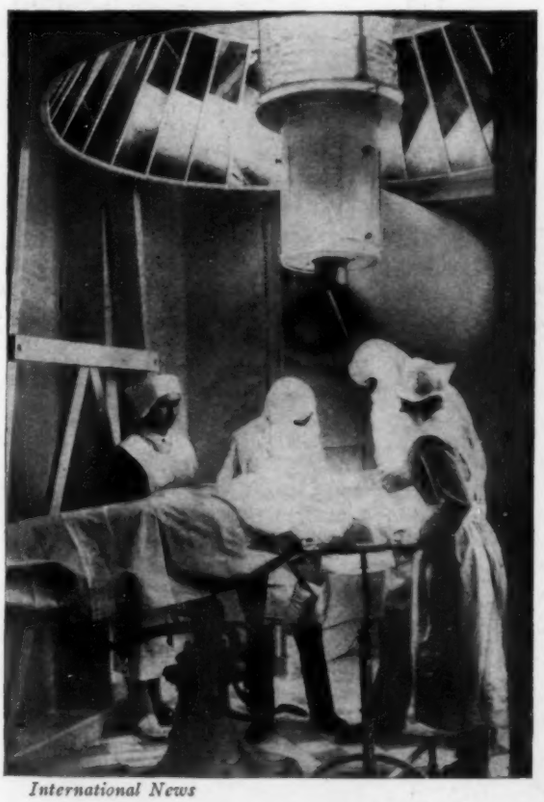
This wax exhibit stressing the importance of periodic health examinations in the prevention of tuberculosis was shown at a conference on public welfare recently held at Evanston, Ill.

*Wide World*

BAREFOOT FOOTBALL IS A FAVORITE SPORT IN HAWAII.

*Pacific and Atlantic*

**FIRSTHAND knowledge is correlated with "book learning" for this class in commercial geography, which is having its lesson on a lumber wharf at Wilmington, Calif. Meanwhile the ultraviolet rays of California sunshine do some good work on the boys and girls and the invigorating sea air sharpens their appetites.**



*International News*

*International News*

**BY A newly invented periscope arrangement of prisms medical students may now see operations on a screen in a room adjoining the operating room. The instrument does away with the crowds that sometimes hamper a surgeon and enables all students to see equally well. On the left is the operation in progress; on the right is shown a group of students watching every move of the surgeon's hand registered on the screen.**

HEALTH *and the* SCHOOL

*Edited by*
*J. Mace Andress, Ph.D.*
*67 Clyde Street, Newtonville, Mass.*

# *Teaching the Right Attitude Toward Cleanliness*

THE subject of cleanliness has two aspects. In a biologic sense the very length and productivity of life depend on cleanliness. In a social sense cleanliness is closely related to success in life. In both senses the attitudes one has toward cleanliness are more significant than the knowledge one has acquired concerning it.

### *Knowledge Is Not Enough*

Cleanliness in a biologic sense is woven into the texture of every person's life from birth to death. For example, the lack of biologic cleanliness in this country causes more than one fifth of all deaths and sicknesses from communicable disease. To be sure, scientific knowledge is still too fragmentary to point the way to the control of certain forms of microscopic life which interfere with human beings. But there are some established facts the disregard of which, as a result either of carelessness or of indifference, converts possible gains in public health into certain losses. For this reason the crux of the cleanliness problem, so far as health is concerned, is not one of knowledge, but of attitudes.

Although cleanliness in its biologic sense may be a life and death affair, we are likely to look more often at its other aspects. Our attitude toward cleanliness, or toward any other subject directly related to human behavior, is largely influenced by its kinship to success in life. How closely is cleanliness related to success, socially, economically, esthetically?

Man is a social creature. He lives with his fellow men on close and intimate terms. No longer is he a part of a small unit living in a cave or wandering over the face of the earth. Today man lives in crowded cities in constant contact with other human beings striving for their places in the social order, their livings in the economic group.

No matter what the individual's attitude toward cleanliness may be, the social and economic groups, in this country at least, are cleanliness-conscious. This statement may be tested easily. In the presence of other human beings, how many of us can feel comfortable in a spotted dress or a soiled collar? What hostess can expect her guests to enjoy the most delicious meal served on a dirty plate or a soiled table-cloth? What applicant for a so-called "white collar job" can hope for success if his appearance is untidy? What surgeon can expect patients if his finger-nails are habitually dirty? Can a setting sun expect admirers if it goes down over a garbage heap?

It is possible that cleanliness may not be an index of ability. We may be charming in spite of the spotted dress or the soiled collar. The hostess at the head of her soiled table-cloth may be a brilliant conversationalist. The untidy applicant for a job may have brains in her tousled head and nimbleness in her grimy fingers. The surgeon with the dirty finger-nails may be skilful. The setting sun may be not less beautiful because of the garbage heap. The point is that the group has definitely become suspicious of unclean persons and unclean surroundings. Charm and ability, hand in hand with uncleanliness, are possible—yes! But is that alliance probable? The chances are against it. As a group we have learned by experience that the qualities that lead to success are near relations of cleanliness.

*In England the tin tub is part of the fun of life. (From "After the Rain.")*

Is it not worth while for the teacher to use her knowledge of this experience to develop in her pupils those attitudes toward cleanliness that the group expects of its members?

### *Making Cleanliness Attractive*

One step in teaching boys and girls to have the proper attitude toward cleanliness is to make the idea of cleanliness attractive. History, literature, art and science may be utilized to glorify cleanliness and to arouse in the minds of pupils disgust for filth and general uncleanliness. The history of the past is not ordinarily inspiring from the point of view of cleanliness. The good old days of long ago usually have little charm for the sanitarian. Dr. Thurman Rice in his splendid volume on "The Conquest of Disease," in referring to the general uncleanliness of the Middle Ages, says:

"The great castles built by the feudal lords had no such convenience as a bathroom, or any proper means of disposing of human filth. Excrement was thrown into the surrounding moat, and it is barely possible that the stench arising from the moat was of value in keeping away enemies. It is no wonder that heavy perfumes and smelling salts were much in demand, and we are not surprised that the filth diseases took the people by the thousands."

In contrast we find that the Greeks and Romans at the height of their power were noted for their cleanliness. Among the Romans cleanliness was regarded as a civic virtue. The baths of Caracalla were a mile in circumference and open at certain times for the free use of every citizen. They were capable of accommodating more than 1,600 persons at a time.

Almost every subject in the school curriculum may be utilized to present attractive ideas on cleanliness, but such teaching alone, no matter how interesting, will be fruitless unless there are ways for children to keep clean. Every course of study on health emphasizes the teaching of cleanliness but frequently such instruction ends with mere word instruction.

School buildings are poorly equipped with hand-washing facilities. Hygienists think of clean hands as essential in the prevention of disease, and yet in few schools are there enough wash bowls, soap and towels to enable all the children to keep their hands clean even if they are properly motivated. One large city system until recently has refused to furnish soap, towels or

*The Dutch can teach cleanliness to all of us. (From "After the Rain.")*

even toilet paper. Such essentials were provided for in various ways, often through a collection taken by teachers and pupils. It is also a sad commentary on practical health teaching that it is the unusual school that makes use of the facilities that it has.

No matter how interesting the stories, books and projects on health may be they will fail to develop effective health attitudes and habits unless means are provided whereby the children may practice cleanliness and be stimulated to carry out their impulses in action.

How will you, as a teacher, answer these three questions:

1. Am I making ideas about cleanliness attractive to my pupils?
2. Are my room and building properly equipped so that children may keep themselves clean?
3. Are my pupils availing themselves of the opportunities that they have to practice cleanliness?

## TEACHING HEALTH

*(In this column will be published each month concrete examples of good health teaching. Teachers are invited to send in contributions not exceeding 600 words and preferably less to the editor of this department. Illustrations of the actual work of children will be welcomed. Contributions accepted will be paid for but no manuscripts will be returned.)*

### ORIGINALITY IN EFFORTS TO KEEP CLEAN

CLEANLINESS has long been recognized as one of the essentials for health and the recommendation that the whole body be washed in warm water more than once a week has been reiterated innumerable times. The question is—How much good does it do to know a thing unless that knowledge is actually applied to daily living? If the bath is not really taken, does the person who knows about that bath feel and look fresh and is that person's health really improved or safeguarded? Somebody has said that the "washed look and smell better than the unwashed" and probably nobody will dispute that.

The matter of taking a sufficient number of whole body baths is frequently governed by the convenience or inconvenience of the bathing arrangements in the home. A survey made of 3,000 rural homes in Missouri revealed that only 3.8 per cent of those homes were equipped with bath tubs. The determined person will have some sort of a bath even if there is no tub. However, privacy, a comfortable temperature, warm water fairly conveniently placed and some reasonably convenient system of waste-water disposal will do much to encourage this necessary amount of bathing of the whole body.

This is what one man did for himself and his family largely as a result of a school health campaign for cleanliness. He purchased a shower-bath spray nozzle for a few cents and soldered it into the side of a large galvanized iron pail near the bottom. The pail was suspended by a rope through a pulley in the ceiling and was made adjustable as to height by the simple method of having a nail in the side wall around which the rope could be wrapped. Thus the shower could be regulated to the needs of the very tall father and the little daughter. One teakettle of boiling water, cooled to the right temperature by adding more water was sufficient for the baths of the four members of the family.

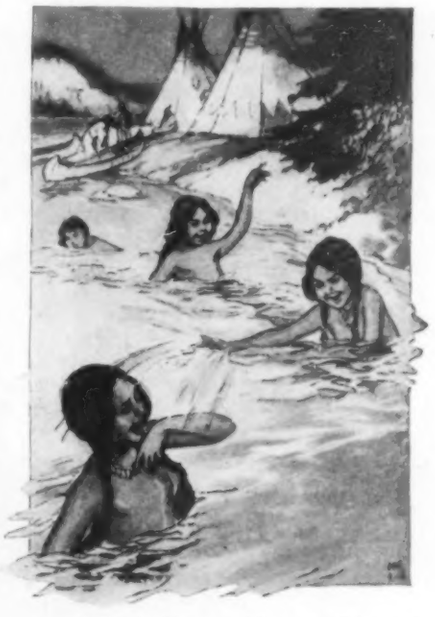
There was no room in which this equipment could be installed, so he inclosed a porch which was on one side of the kitchen, covered a section of the floor under the shower with zinc perforated in the center to allow the water to escape into a tile drain installed for that purpose. Hot and cold water are conveniently obtained from the kitchen, the bath room is sufficiently heated, from the kitchen stove except in extreme weather when a small kerosene oil heating stove is used. All the requirements and allurements for bathing have been met and it is needless to add that there are at least four full-body baths in that family daily.

MARY E. STEBBINS,
Columbia, Mo.

### A CLEAN-UP CAMPAIGN

AS MRS. B. surveyed the building and campus of the little school in East Texas she was greeted with the dirtiest and most insanitary situation she had ever witnessed. Scattered over the ground were millions of bits of paper and parts of the campus were grown up with weeds. Under a tree was a table on which were three buckets, evidently the source of the children's drinking water; however, at this instant there was an old Jersey cow contentedly drinking her fill from one of the buckets. The teacher was horrified; there flashed into her mind one purpose and that was to alter matters as soon as possible. But how?

Being a teacher of the seventh grade, she taught both civics and



*American Indian maidens bathing at dawn. (From "After the Rain.")*

health. By careful and tactful methods she thought that through these subjects she could teach the children one of the first principles of healthful living, which is cleanliness.

Through civics lessons she stressed the fact that when one endangers the lives of others

## LET THE DUTCH TEACH YOU CLEANLINESS

*(An Outline for a Lesson on Cleanliness)*

MAJOR OBJECTIVE

Through the study of the Dutch to teach to the child the value of cleanliness.

MINOR OBJECTIVE

To familiarize the child with the means that the Dutch use to keep clean.

*Hygiene:*

Cleanliness in the home.
Personal cleanliness.
Cleanliness in the community.
Each of the above topics can be divided into many subtopics.
Material should be taught that is suitable to the grade.

*Motivation:*

This project can be motivated by either telling or reading the story "Spotless Home of Holland" from the book "After the Rain" by Grace T. Hallock. This book may be had by sending to School Department, Cleanliness Institute, 45 E. 17th Street, New York, N. Y. There are two other books that a teacher may have for the asking. More than one copy will cost 25 cents. They are "The Animal Way" and "A Tale of Soap and Water." A good list of reference material on cleanliness is "Cleanliness," published by the same company.

*Language:*

Conversational Periods—
Care of the teeth.
Baths.
Care of the hair.
Cleanliness in the Dutch homes.
Clean hands.
How the Dutch child keeps clean.
Dutch children.
a. What they play.
b. What kind of homes they live in.

Story Telling—
"Smitty," by Kathleen Mitton, Primary Education-Popular Educator, April, 1927.
"Going to the Party," by Elsie Parrish, Primary Education-Popular Educator, June, 1927.
"Green Duck—Why the Children Left No Rubbish in the Park," Normal Instructor and Primary Plans, June, 1927.
"Story of the Soap Boat," by Elizabeth Woodruff, Good Housekeeping, June, 1927.
There are many stories on cleanliness that you may find suitable.

Dramatization—
How the Dutch clean the outside of their houses.
How they scour their floors.
Washing our teeth or hands.

Oral Talks—
Baths.
How to wash your hair.
Bathing and swimming.
Care of the face.
Cleaning and care of the furniture.
How the Dutch care for their furniture.

Compositions—
How to keep the mouth and teeth clean.
Your hair and health.
Cleanliness prevents sickness.
Compare the way that the Dutch housewife cleans house with the American housewife's methods.
The value of washing out clothes.
How to clean different kinds of woods and metals.
Why we should disinfect our homes.
How the sweeping should be done.
Comparison of the Dutch homes with American homes as to cleanliness.
Write a letter to a Dutch child asking him how he cares for his home and himself.

*Music:*

Any of the many Dutch songs that you find.

*Construction Work:*

Make a scene of a Dutch home on the sand table.
Make decorations for the room to show some phase of life among the Dutch people.
Make posters to show a Dutch scene.
Make posters on cleanliness.
Make booklets on the value of cleanliness.
Make booklets showing how the Dutch people keep their homes clean and also for the American homes.
Make a chart to show the steps in washing clothes or in cleaning the house or the furniture.
Make Dutch dolls.

*Drawing:*

Draw a tulip, wooden shoes, a windmill.
Paint a Dutch scene.

*Geography:*

Upper grades should make a study of Holland following this outline:
People.
Climate.
Products.
Surface.
Occupations.
Industries.

*History:*

Fifth and sixth grades should in their history work have some of the early history of the Dutch.
Seventh and eighth grades should study the early Dutch settlements in America.

*Reading:*

Each child should read everything that is in his own text on the Dutch, and also every other book containing material on the Dutch suitable for his grade.

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through carelessness he is as much of a criminal as if he did this intentionally. That was what had happened when the cows drank from the children's water buckets, when the weeds grew on the grounds, and when the bits of paper littered the ground.

In the health class she showed how diseases are caused by germs, and that trash, filth and unprotected drinking water are among the greatest breeding places of the germs. Then she gradually brought the subject to the point at which she could apply it to their own school. She suggested that the children stage a clean-up program some Friday afternoon and permitted them to have a quarter of the afternoon in which to do it. All the children were anxious to help.

The Sunset Coffee Company offered to any group a $15 premium for coffee can tops that represented 300 pounds of coffee. The people of this section drank an excess of coffee so that made it easy for the children to get the required amount and over. When a premium of $30 came, it was immediately invested in two large sanitary water coolers.

ELZIRA GIBSON,
Trinity, Texas.

## OUTDOING OUR WAR LOSSES

*Child Health*, a magazine for teachers published by the Oregon Tuberculosis Association, is a chatty sheet with many practical suggestions for teachers. Among the "Inklings on Health for High School Students" we notice this item:

"As many Americans have been killed in the last twenty years celebrating our victory in the Revolutionary War as were killed in the war itself. More than 100 lives are lost on the Fourth of July each year."

## NEW HEALTH BOOKS AND TEACHERS' MATERIALS

The late Dr. Morton Prince is reported to have said, "The problem of motivation is the only important one in human life." Those who would not go so far in their estimates of its value would agree that it is so important in our social relations that if we knew the springs of human conduct we should have tremendous power in influencing other persons. The business man would be better able to sell his product, the physician would be more successful with his patients and the teacher would be more efficient.

Dr. Troland has written a scholarly volume on human motivation,[1] in which he attempts to present the pertinent facts and theories on the subject in a systematic manner. It does not pretend to be a popular discussion but rather a scientific analysis of the motivational problem. In it he proposes a doctrine called the theory of retroflex action. This doctrine is a form of psychologic hedonism based on the principle that a voluntary choice is based on the summation of all past affections.

The book is so vague and general that the reviewer hesitates to discuss the theory in detail. It is unfortunate that the author in his summary in the last chapter does not attempt to translate his theory into concrete reality. A few practical suggestions for the teacher, lawyer and business man would have helped to dissipate the philosophic fog with which he has so successfully surrounded his subject. The health educator who wants to know how to get Mary to eat spinach will look in vain for a simple, clear-cut statement of Dr. Troland's theory which will enable him to turn the trick.

NONE of the sciences presents a more romantic background than chemistry. At the dawn of history man speculated about the nature of material things and the elements of the physical world. The first ideas came from the Far East more than 4,000 years ago. While Europe was still overrun by barbarians, the old Hindu philosophers and Chinese Buddhists conceived the universe to be composed of earth, water, fire, wind and ether. The Greek philosophers, Empedocles, Plato and Aristotle reasoned along similar lines.

It was in Egypt that chemistry as a science began to take root. There speculation gave way to experiment. Chemia, or the black art, as it was then called, became an effort to convert the baser metals into gold. Nobody knows who started the search for the philosopher's stone, which was said to have the mysterious quality of turning baser metals into precious ones, but we do know that the possibility of the existence of such a stone gripped the imagination of people for at least 1,500 years. Alchemy proved fruitless but chemistry arose phoenix-like from its ashes. Long ago Francis Bacon compared alchemy to the man in the story who told his sons that there was gold buried in his vineyard. They dug faithfully but found no gold. In the digging they did stimulate the growth of the grapes and procured a plentiful vintage. Chemistry, the outgrowth of alchemy, has opened up a new world to man and given him miraculous powers.

Dr. Glasstone in his "Chemistry in Daily Life"[2] tells us about the romantic past of chemistry and its place in industry and modern life. It is a book that may be understood by those who have had no course in chemistry, but it needs to be studied.

The relation between health and chemistry is so close that every teacher of health should know something about the fundamental principles of chemistry.

This is an excellent book for the special teacher of health or the regular classroom teacher. There are several chapters that relate to health—"Burning and Breathing," "Energy Requirements," "The Chemistry of Digestion," "Vitamins," "Catalysis and Enzymes," "Medicines and Perfumes," "Artificial Food" and "Clothing."

PSYCHOLOGY is such an abstruse subject that any book that is sound in content, attractive in approach and practical in application will always be welcome to students and teachers of psychology. Such a book was "Human Behavior" by Colvin and Bagley. When it appeared in 1913, it immediately became one of the most popular texts on the market. This popularity continued long after the passing on of Dr. Colvin, well known for his genial personality and gifts as a teacher.

Now after sixteen years this book[3] has been revised. The earlier chapters have been modified little. The concluding chapters have much new material. The chapters on "The Efficiency of Behavior" and "Character and Behavior" are excellent. The brief footnotes on the lives of great psychologists scattered through the text will be welcomed. Dr. Bagley and Dr. Macdonald are to be congratulated for their excellent revision.

THE teaching of biology offers one of a number of ways of teaching health in high schools. Peabody and Hunt in "Biology and Human Welfare"[4] have realized their opportunities. Not only have they written an excellent text with human appeal but the relation of the subject to healthful living is presented naturally. It is one of those delightfully written books that almost tempt the reviewer to wish that he were a high school student again to experience once more some of the thrills of approaching this fascinating subject.

The experiments scattered through the text are well chosen and adapted to the themes of the book. The student who studies this book with care will get a good idea of the anatomy and physiology of the human body and many of the principles of hygiene.

TEACHERS of geography and social science in junior high schools who wish their pupils to know where different farm products come from will welcome the interesting project on "Uncle Sam's Farm."[5] It consists of three pieces of material; a large outline map of the United States; a sheet of colored pictures of farm products, such as oats, wheat, grapes and oranges, and a teacher's guide on the use of the project. In this guide there is a list of some twenty-four farm products. After the name of each there is a list of the three leading states producing this particular farm product. The sheet of colored pictures represents three pictures of each product. They are of three different sizes depending on the comparative production in the states. Children are supposed to cut these pictures out and paste them on the appropriate places on the map. This map is free of charge for classroom purposes.

THE National Tuberculosis Association writes that it does not supply free to teachers "Posters for Health Teaching—How to Make and Use Them" and the "Kewpie Health Booklets," as stated in HYGEIA for December. These booklets are distributed only through state and local tuberculosis associations, and it is possible that in some instances the local associations supply them free to teachers.

1. The Fundamentals of Human Motivation. By Leonard T. Troland. Pp. 521. Price, $5. D. Van Nostrand Company, New York, 1928.

2. By Samuel Glasstone. Pp. 250. Price, $2.25. E. P. Dutton & Co., New York, 1929.

3. Human Behavior—A First Book in Psychology for Teachers. By Stephen S. Colvin, William C. Bagley and Marion E. Macdonald. Pp. 334. The Macmillan Company, New York, 1929.

4. By James Edward Peabody and Arthur Ellsworth Hunt. Pp. 585. The Macmillan Company, New York.

5. Uncle Sam's Farm (A Map Project), Quaker Oats Company, Chicago, 1929.

# New Books *on* Health

*Reviewed by*
*Morris Fishbein, M.D.*
*and Others*

## MEDICAL LEADERS—FROM HIPPOCRATES TO OSLER

By Samuel W. Lambert, M.D., and George M. Goodwin, M.D. Cloth. Pp. 331, with 32 illustrations. Price, $5. The Bobbs-Merrill Company, Indianapolis, 1929.

IN THE writing of medical history, the biographic method seems to be superior to all others for the simple reason that drama in medicine is associated with the lives of men who have made the most significant contributions. A few years ago "Microbe Hunters," by Paul De Kruif, became a best seller for the reason that De Kruif, with extraordinary journalistic sense, selected from the lives of the great contributors to medical science the moments of greatest dramatic importance and built his biographies about those moments.

There have been repeated attempts to do for the ancients in medicine what De Kruif did for our more modern contributors to bacteriology. Unfortunately numerous volumes of recent years have not been able to command the audience that the more stimulating "Microbe Hunters" commanded. It is not particularly strange that medical historians should find it difficult to paint picturesquely the personalities of the great leaders from Hippocrates and Galen to Harvey, Sydenham and even Jenner. In the first place but little of the lives of most of them is known. Moreover, their contributions have not the extraordinary qualities of combat and warfare which attach to work in the field of bacteriology. The discovery of a philosophical conception of disease, of blood pressure or of the circulation of the blood is not nearly so fascinating to the lay reader as the pursuit of an invisible enemy even though the microscope is the weapon used for locating the enemy.

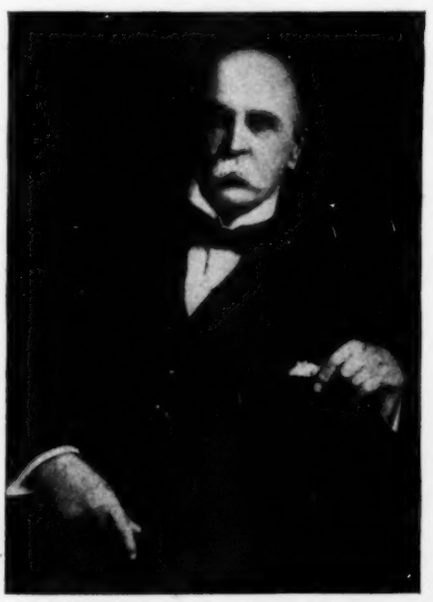
In their account of the progress of medicine, Doctors Lambert and Goodwin have given a straightforward description of men whose lives and accomplishments serve to mark definite epochs in medical history. Thus their work is the kind of medical history that may be read by any reader with complete understanding. It will give him a picture of the development of medicine through the centuries. It will bring him inevitably to Gorgas, who was the practical exponent of the prevention of disease, the greatest contribution to civilization of the past quarter century, and to Sir William Osler, whose life reveals what medicine can accomplish through the work of the devoted physician for the relief of ailing humanity.

## STRETCHERS

By Frederick A. Pottle. Pp. 366. Price, $3. Yale University Press, New Haven, Conn., 1929.

FEW persons know how the sanitary service and medical units of an army function during a war. The organization of aid for the wounded is as systematic as the finest strategy of battle. It includes evacuation hospitals, dressing stations, field hospitals and base hospitals. The soldier who is wounded and picked up by members of the medical corps finds himself moving steadily through various units organized to restore his health.

In this volume the author traces his work in the World War from the time when he enlisted at Fort Slocum, through his training in Fort Oglethorpe, the great battles at Belleau Woods and Château-Thierry, through the battle of the Marne and the Argonne and to the watch on the Rhine. His book is supplemented by innumerable letters, bulletins and reports, by interesting pictures and by innumerable anecdotes. It presents fully the human side of medical care and turns out in the end to be the type of indictment of war made by Barbusse and Cummings.



*Sir William Osler. (From a photograph in the collection of Archibald Malloch.)*

## CONSERVING THE SIGHT OF SCHOOL CHILDREN

Report of the Joint Committee on Health Problems in Education, the National Education Association, and the American Medical Association, with the cooperation of the National Society for the Prevention of Blindness. Revised Edition. Pp. 56. Eleven illustrations. Price 35 cents. The National Society for the Prevention of Blindness, New York City, 1928.

THIS book is a revision of a report first published in 1925, prepared by the associations mentioned. The original report was based on questionnaires returned from departments of education in cities of more than 10,000 population and from leading ophthalmologists

The report is intended to serve teachers, school nurses and school physicians, as a manual of instruction and gives methods of observing eye defects, of testing visual efficiency, and of determining what children have need of expert examination and treatment.

In this new edition, many minor corrections of text have been made, among them several emphasizing the importance of the family doctor in examination of school children, including the eyes. A vision chart is inserted, on which are presented the letter chart drawn to the Snellen scale, and the symbol E chart, for testing the vision of young children. The manner in which this chart is used is made clear by a number of illustrations.

The changes and additions which have been made in this edition of the report add much to its clearness and usefulness and make it one of the most helpful reports that the Joint Committee has contributed to the matter of school health.

—JOHN M. DODSON.

An error in translation appeared in the December HYGEIA. A legend in this department under a diagram from Professor Kahn's "Das Leben des Menschen" should have read: "The human being has 639 muscles, containing six billion fibers and six trillion fibrils. In Germany the word milliard means a thousand millions, or a billion, and the word billion means one million millions.

# Questions *and* Answers

*If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed.*

### Aluminum Cooking Utensils

*To the Editor:*—I am interested in obtaining authentic information as to the action aluminum has on food cooked in it and the effect that the food has on the human system when consumed. Will it be possible for you to give me information as to why some foods discolor the utensil and other foods extract the color from it? When this color is absorbed by the food is it good to eat? W. W. B., New Jersey.

*Answer.*—Foods containing iron when cooked in an aluminum vessel sometimes yield a coloration due probably to formation of a ferric aluminate, which possesses a purplish brown color. On all aluminum surfaces there is present a film of aluminum oxide; this film may retain grease in small amounts so that when one wipes the surface with the hands a black coating will appear on the hands. Likewise solutions containing strong acids or strong alkalis remove the coating, leaving a more highly refractive surface. Numerous observations, however, have failed to yield evidence that these trivial amounts of aluminum are in any way injurious to the human system.

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### Tumors

*To the Editor:*—I should like information about uterine tumors. Is a cancer a malignant uterine tumor? Is the difference between a benign tumor and a malignant tumor the difference between a curable and an incurable condition? Is the cause of such tumors known?

H. F. K., Indiana.

*Answer.*—Cancer is a malignant tumor. While cancer is in many cases incurable, early operation for its removal results in the complete cure of many patients.

A malignant tumor is one whose cells penetrate and destroy the tissues of the part in which the growth begins and also one whose cells may be conducted to other parts of the body and there start similar processes far removed from the original focus.

A benign tumor, though it may grow to great size and produce damage by pressure and in other ways, does not invade other tissues as does cancer. A benign tumor, when removed, does not recur. A malignant tumor or cancer often does recur. The cause of such tumors is unknown.

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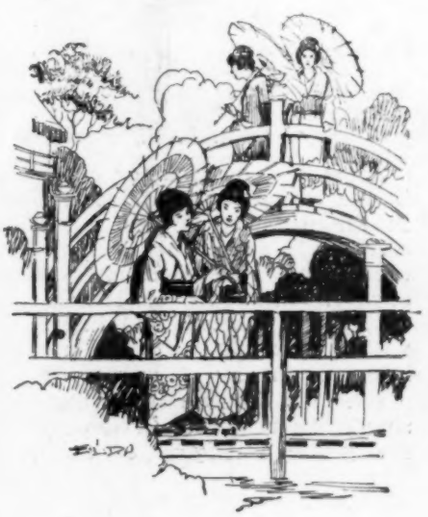
### Pregnancy and Care of the Teeth

*To the Editor:*—I am ten weeks' pregnant and am concerned over my teeth and also over whether the baby's teeth will be strong. My doctor doesn't tell me anything except that I should go to the dentist as usual. As I had my teeth cared for recently, I am not in need of a dentist's care, but I should like to know what I should eat and what mouth wash I should use, if any. I have been told to drink milk and eat green vegetables, but every one is so indefinite as to the amount.

M. H., Illinois.

*Answer.*—It is important for the expectant mother to keep her teeth in the best possible condition by visits to the dentist as often as he thinks necessary. She should also take more than the usual amounts of foods that are rich in calcium. To assist in making selections, the American Medical Association publishes a leaflet in which are listed the foods that contain the largest amounts of calcium. At the head of the list are milk and its products, cheese and buttermilk; then follows a list of vegetables.

A quart of milk a day is a good allowance, but one might, at times, take more than this without harm. HYGEIA has a pamphlet entitled "A Child Is to Be Born," in which advice is given to the expectant mother, including among other things, suggestions as to diet.



### Frontal Sinusitis

*To the Editor:*—My wife has a severe frontal sinusitis at times affecting the antrums, the right side especially. This condition started while we were stationed at Fort Monroe, Va. Her upper teeth were extracted and replaced by dentures while we were stationed in Panama. Attacks have been quite severe since our transfer to San Francisco early in 1927. Operation has not been considered, and temporary relief has been obtained by the use of a nasal spray. I should like to know of a location in this country where relief can be obtained, that I may make arrangements to settle there when I retire from the army.

H. A. F., California.

*Answer.*—It is difficult to specify a particular locality or climate in which sinus infections do not occur. As a general thing, however, those places that have sudden and marked variations in temperature or a great deal of cold, damp weather are unfavorable for sufferers from sinus infection.

The ideal spot would be one where the temperatures vary but little and where it is warm and reasonably dry. Southern Arizona in the region of Tucson or Phoenix, especially the former, is good for these cases especially during the winter time. It must be said, however, that there is a rather sudden drop in temperature in the evenings, and in summer the heat is so intense that few people can well tolerate it. For those who enjoy and thrive on hot weather, southern Arizona has proved favorable. The region of San Diego, Calif., is good, for the temperature is warm, mild and equable, even though the city lies on the Pacific Ocean. San Antonio, Texas, is also favorably located but is of course hot in summer. These three places would probably be best for the sufferer.

It must be remembered, however, that sinus infection may occur in any locality, but if a person lives in one of the regions mentioned, he is less likely to have frequent or severe exacerbations of the trouble. With this diminution in the frequency of attacks, together with the beneficial effect of warm, balmy air, the mucous membranes of the nose and of the sinuses have a better chance to recuperate and to resist infection.

### Relief from Hay-Fever

*To the Editor:*—Is there any place in northern Illinois in which a sufferer from hay-fever caused by the pollen from ragweed could go to get relief? If not, how far north would one have to go?

W. B. H., Illinois.

*Answer.*—There is no place in northern Illinois that is really free from ragweed pollen during the months of August and September. Some hay-fever sufferers from southern Illinois receive great relief by spending the latter half of August and the month of September in Chicago, which has the advantage of being on the lake and so has lake winds which are free of all types of pollen. On days when the wind is not off the lake they spend most of their time inside the large hotels and in the large moving picture houses that have washed air and thus remain free from symptoms, even though the outside air is pollen laden.

The ragweeds extend north into Canada as far as there is civilization; however, in some regions such as Duluth, Minn., Sault Ste. Marie, Mich., there is relatively little ragweed pollen and sufferers from southern Illinois are quite comfortable there provided the season is not too long and too hot with strong winds from the south.

Some of the mountainous areas are relatively free from ragweed, and northeastern Maine should offer comparative relief to sufferers from the Middle West.

### Cooking Broccoli

*To the Editor:*—In an article on "Unusual Vegetables" in the May issue of HYGEIA Miss Lulu G. Graves writes about broccoli. One of the chief values of broccoli seems to be its vitamin content, and yet in telling how to cook this vegetable the author suggests cooking it in a great deal of water to which has been added a pinch of soda. According to prevalent information soda destroys vitamins; also, cooking in a large amount of water probably means that the vitamins will be wasted. I should like to have my present knowledge of the subject corrected so that in my work as home demonstration agent I may not continue to pass on information which, according to Miss Graves' article, is incorrect.

C. M. J., New Jersey.

*Answer.*—Halliday and Noble in their work at the University of Chicago found that in cooking green vegetables (except spinach and similar tender ones) in water that is neutral and not strongly alkaline better results were obtained by the addition of soda in the proportion of one-sixteenth teaspoonful to one quart of water. This amount did not appreciably affect the vitamin content and the color and firmness of texture were retained, always provided they were not cooked too long.

In all members of the cabbage family, the sulphur undergoes a chemical change during cooking, a compound is formed that is objectionable both for its flavor and its discoloration of the vegetable, producing what is known as "mahogany cabbage." This sulphur compound is volatile and cooking with an abundance of water and with the kettle uncovered permits much of it to pass off in vapor, leaving the vegetable with a better color and flavor. This is true of broccoli, as well as other members of the cabbage family. No doubt some mineral matter is lost by this method of cooking but, with the possible exception of calcium, the loss is replaced by other means.

### Glycosuria

*To the Editor:*—About a year ago I had a urinalysis which showed slight traces of sugar. Further tests show that when I eat a bar of candy traces of sugar will appear about three days later. When I do not eat any sugar the test shows no sugar. Is this condition anything to worry about? I feel well in every respect. I am 38 years old, 5 feet 11 inches tall and weigh 197 pounds. My weight has been the same for about ten years. A doctor told me that this condition could exist and yet I might never have diabetes. Is this statement correct?

G. J., Wyoming.

*Answer.*—The physician is correct. The mere appearance of sugar in the urine is not in itself sufficient to make a diagnosis of diabetes. It is well, however, for one who shows this condition of glycosuria to consult his physician occasionally, have him examine the urine in connection with other symptoms and advise as to the diet and other matters.

### Wax in the Ears

*To the Editor:*—What causes a steady accumulation of wax in the ears? Is this healthy or unhealthy?

A. A. H., Virginia.

*Answer.*—The wax, or cerumen, in the ears is a normal secretion. In the majority of persons, it is secreted in the proper amount but occasionally the secretion is excessive. In such cases it becomes dry, or inspissated, and interferes with hearing. It is not usually injurious in any other way.

When it does so accumulate, it should be removed, preferably by the gentle syringing of the ear. When it is too hard, the services of a physician may be needed.

### Eye Washes

*To the Editor:*—Is boric acid harmful as an eye wash? Is salt water a good eye wash? Which do you consider the best eye wash on the market?

C. V. J., Michigan.

*Answer.*—Boric acid as well as salt water is useful in eye washes when used in proper strength to meet the condition present. The American Medical Association does not recommend any of the advertised eye washes. The claims made for them are utterly unsupported.

### Tuberculosis of Testicles

*To the Editor:*—Will you kindly inform me if there is any cure or treatment for tuberculous testicle in the early stages, and who are the foremost authorities on this ailment? Have any cases been improved or cured by use of the Alpine sun lamp?

M. R., New York.

*Answer.*—Primary tuberculosis of the testicle is not common. The process usually starts in the epididymis, frequently the upper pole, or begins in the seminal vesicle and invades the epididymis by way of the vas deferens. If the testicle is involved it is usually by direct extension from the epididymis. If it begins in the epididymis and is discovered early, excision will often clear up the condition. Any good urologist is capable of handling this condition. Alpine light and tuberculin injections are good treatments after operation and may be of some value in cases that are not treated surgically.

### Avocado Pears; Rhubarb

*To the Editor:*—1. Will you please tell me the food value of avocado pears? 2. Would rhubarb sauce made with honey instead of sugar increase acidity?

C. L. B., Illinois.

*Answer.*—1. Avocados (alligator pears) are rich in fat, containing in the edible portion about 20.1 per cent of fat. This gives the avocado a high caloric value. One pound of the edible portion of the avocado yields 993 calories. As it is purchased in the market, a pound, including the thick, hard skin, has 652 calories.

2. There is no advantage in using honey rather than sugar with rhubarb except as a question of taste.

### Calcium Wafers

*To the Editor:*—Are calcium wafers dangerous to use?

E. S., South Dakota.

*Answer.*—Calcium wafers of any sort are not dangerous to use, but a tablespoonful of lime water or a few grains of precipitated chalk answer the same purpose.

### Menopause

*To the Editor:*—My menstrual periods have stopped at the age of 37. My mother says it is unnecessary to consult a physician, as it is only change of life. I had always thought that change of life did not come until the age of 45 except when the ovaries were diseased. Will you please advise me regarding this matter?

M. M., Kentucky.

*Answer.*—It is unusual for the change of life to begin as early as 37, but it may do so. Not infrequently this early beginning occurs in the daughter of a mother who has had a similar experience. It would be wise to consult a physician to make sure that there is no abnormality present.

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### Expectorates Cheesy Particles

*To the Editor:*—What is a cheese-like substance that is expectorated in small particles? Is this material of any diagnostic value? Is a temperature of 99 F. considered normal in some persons?

J. L., Missouri.

*Answer.*—Small cheesy particles may be expectorated from a number of sources. The secretions in the crypts or follicles of the tonsils often become purulent and are discharged as cheesy masses. They may come from other glands of the nose or throat, and, finally, they may come from the lungs. Whether or not they have diagnostic value depends on their nature and the organ from which they come.

A temperature of 99 F. is within the range of normal, but might, under certain circumstances, if it is a distinct elevation that occurs daily, be of significance.

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### Pneumonia Brought on by Exposure

*To the Editor:*—On Dec. 27, 1928, my father, who was 68 years old and apparently in good health, ascended a scaffold about 22 feet from the ground to remove slate from the roof. While he was on the scaffold the temperature changed to a damp, penetrating cold. After two hours he came in the house complaining of being chilly; in another hour he was suffering with a serious chill followed by a rise of temperature. This developed into lobar pneumonia, from which he died ten days later. Is it possible that the exposure caused the pneumonia? C. L. S., Pennsylvania.

*Answer.*—One of the recognized contributing causes of pneumonia is a sudden chilling of the body. In some way not clearly understood, this seems to lessen the resistance of the body to the pneumonia germs which are present at times in the throats of many normal persons and which do no harm until some added factor like exposure and chilling supervenes.

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### Treatment for Neuritis

*To the Editor:*—Is there any advertised preparation for neuritis that you would recommend?

C. L. W., District of Columbia.

*Answer.*—Advertised preparations for neuritis cannot be recommended. Practically all of them are sedative drugs, which do not cure but only relieve pain.

Neuritis, or inflammation of a peripheral nerve, may be due to a number of causes. For example, so-called focal infection from an infected tooth, tonsil or appendix, or some other part of the body, sometimes causes an inflammation of a nerve, just as it may cause an inflammation of a joint. Oftentimes the removal of the infected focus cures the inflammation of the nerve.

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### Syphilis

*To the Editor:*—Two years ago I worked with a person who was possibly infected with syphilis. We often used a common drinking cup. Is there a possibility of my having taken the disease? I have no good reason to believe that I contracted the disease, but a booklet on the subject speaks in an alarming manner of the prevalence of syphilis and of the ease with which it may be unknowingly acquired. It says, "There are other ways in which syphilis may be innocently acquired. Dishes, knives, spoons and forks . . . have been recorded as a source of danger." Also, "In many cases the first symptoms may be so slight or so concealed that the patient does not recognize them." On the other hand, my doctor thinks I am worrying over nothing. He says, speaking offhand, that in only one case in ten thousand could the disease be contracted in this way. He says that there would have been pronounced symptoms of infection had I taken the disease. Which is right, my doctor or the booklet? I am far from a city where I could consult a specialist. Would negative results from a Wassermann blood test (blood sample being sent to a state laboratory) prove finally that my fears are ungrounded? I am getting ready to teach school and, although I am enthusiastic about my work, the thought that I might possibly have syphilis and convey it to children or others is making my life miserable.

B. D., California.

*Answer.*—Persons with syphilis, if properly treated, remain infective and therefore a danger to others for only a short time after the original infection has been sustained. If the inquirer has consulted a doctor, she has done exactly the right thing and the best suggestion we can make is that she follow his advice. If she were to send a specimen, or better, three or four specimens at intervals, to the state laboratory for the Wassermann test and were to receive a negative report, she could be reasonably certain that she was not infected with syphilis. This person certainly does not need to worry about being a source of infection to others if she has no visible signs of the disease and has obtained a negative Wassermann report.

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### Diseased Tonsils

*To the Editor:*—I am told that I have chronic tonsillitis, although I have had only one real attack. My throat is always inflamed and occasionally sore in the mornings. I am extremely nervous. Is there any way of treating diseased tonsils other than operation, such as x-ray or diet? Would they cause heart or kidney disease, as I am told? I am 26 and am nursing a five months old baby. Would local or general anesthesia be safer in removal?

G. B., Illinois.

*Answer.*—It is impossible to give a categorical answer to this question. One of the difficult questions for a physician to decide is whether or not the tonsils in a particular patient should or should not be removed. It has been definitely demonstrated that in some cases a focus of infection in the tonsils is the cause of constitutional trouble such as inflammation of the joints, kidney, heart or other organs.

The physician who knows thoroughly the history of the case and has examined the patient's throat is the only one who is qualified to speak intelligently, but it would be entirely proper for the patient to suggest to him a consultation with a physician who has had a large experience in treating diseases of the throat.

No other method of treatment is nearly so satisfactory as removal of the tonsils by one of the recognized methods. Whether or not a local or general anesthetic is to be advised depends upon the conditions present, including the temperament of the patient.

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### Twilight Sleep

*To the Editor:*—Is twilight sleep a success? W. S. H., California.

*Answer.*—Twilight sleep is a success in some clinics particularly equipped for it. In various modifications it is used in other clinics. Other equally successful methods are employed in practically every hospital large enough to have a regular maternity department.

### Arthritis Deformans; Mountain Climbing

*To the Editor:*—1. My husband has arthritis deformans and suffers intensely most of the time. He has bought a violet ray lamp and uses it about twice a week for fifteen minutes; is this good for him or may it do him harm? 2. During the epidemic of ten years ago, I was one of the few adults who had infantile paralysis, but recovered in about one year with the exception of a slight lameness and a weakness of the left hand. My physician advised me to climb mountains, as I have always been an ardent mountain climber and felt horrified at the thought that my mountain climbing days were over. But, following his advice, I became more lame than I had been, though I was always careful never to become overtired. Was the exercise too much for me and shall I discontinue it?

F. H. E., Wisconsin.

*Answer.*—1. Whether treatment with a violet ray lamp would be of help to a patient with arthritis deformans is difficult to say because relatively little is known about the effect of ultraviolet rays in such conditions. It ought not to be used except under the direction of a physician, who should see the patient from time to time. Up to date no cure has been discovered for arthritis deformans that can be used with any certainty of effectiveness.

2. We cannot advise as to the matter of mountain climbing in the absence of a personal study of the case. We should judge, however, that the person's own experience would be of great value. If she finds that climbing makes her feel worse we certainly should not think it wise to continue.

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### Gray Hair at 19

*To the Editor:*—Is there anything that I can do to stop my hair from turning gray? Will pulling out gray hair cause more to take its place? Can a person get gray haired at 19 years of age? My hair seems to be oily unless I wash it every week.

M. F., West Virginia.

*Answer.*—Loss of color in the hair comes at different ages. It is unusual for gray hairs to appear at so early an age as 19 but not at all unheard of. Heredity sometimes seems to play a part. No one knows the cause of gray hair, though there is apparently some relation between the nervous system and the color of the hair, as nervous disturbances, like shock, grief and anxiety are sometimes followed by the appearance of gray hair.

There is no known remedy except to pull out the gray hairs or, when they become too numerous, to color them. Hair dyes that are safe—that is, free from poisonous material—do not color the hair very satisfactorily, but they are used by a good many persons.

The advertised hair dyes frequently state that they restore the original color of the hair. This is untrue. There is no medicine or treatment of any kind that will do that.

There is no objection to washing the hair two or three times a week with a suitable soap provided that is necessary to keep the hair reasonably free from oil.

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### Pul-Bro-Tu

*To the Editor:*—Could you kindly give me information as to the composition of Pul-Bro-Tu? It is distributed by the Dr. Kirkpatrick Remedies Company of Portland, Ore. Also, will you tell me what harm will result, if any, to a tuberculous patient taking this remedy as prescribed, provided the patient does not depart from the rest treatment?

S. L., Arizona.

*Answer.*—In the January, 1929, issue of HYGEIA, an article "Consumption Cure Quackery" was published, dealing with a number of quackish or fraudulent alleged cures for consumption. Here is what was said about Pul-Bro-Tu: "George Kirkpatrick, a quack of Portland, Ore., exploited this humbug. The chemists of the American Medical Association found Pul-Bro-Tu to be essentially a weak solution of potassium iodide and an arsenic compound. The Oregon Public Health League investigated 124 cases of those who had been treated with Pul-Bro-Tu. They found eighty-nine of the victims dead, twenty-six as bad as ever, and none cured." The use of potassium iodide by those suffering from tuberculosis is fraught with danger.

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### "Manam"

*To the Editor:*—Please give me some information about Manam. I am inclosing the outside cover of a box of Manam.

M. O., New Jersey.

*Answer.*—Manam is simply a trade name for one brand of psyllium seeds. These seeds act as a mild laxative because of their mucilaginous character, much as does flaxseed.

It is much better to get along without laxatives, even those whose action is purely mechanical. The vast majority of persons secure regular bowel movement through diet, exercise, free use of water, and the establishment of a habit of going to the toilet at the same hour each day whether or not there is any inclination to bowel movement. The trouble with all laxatives is that they lose their effect, the dose has to be increased, and, finally, they are not effective at all in many cases.

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### Rocky Mountain Spotted Fever

*To the Editor:*—The California wood tick, hitherto considered harmless as far as its bite is concerned, now is known to be a carrier of the dreaded Rocky Mountain spotted fever. The health department of the state asserts that the percentage of fatalities is extremely high and issues a general warning, which is hardly helpful to mountain hikers or mountaineers. Now, for a personal question: Some two years ago I was bitten by a wood tick in the Sierra Madre Mountains of southern California. Although the tick was then considered harmless, I developed the recognized symptoms of spotted fever; that is, fever, general malaise and the well known circular sores on my ankles. However, the attack was slight, the fever abated quickly and the sores healed after two weeks or so. Since then I have been bitten by wood ticks in many parts of the California Coast Range, but have never had any bad after effects. Would my one attack, though a mild one, tend to make me immune? I know many persons, including mountaineers, who declare that wood ticks never bite them. In fact, their number seems to exceed that of sufferers like me, who are always attacked. What is the reason, if known, of such an immunity?

R. W. M., California.

*Answer.*—If the inquirer was bitten in Southern California where there are not supposed to be any wood ticks of the variety *Dermacentor andersoni,* the case was probably not one of mild spotted fever.

The tick in Southern California is the *Dermacentor occidentalis,* which sometimes will produce a sore at the seat of the bite, but has not been known to cause Rocky Mountain spotted fever.

In the northeastern part of that state is found the *Dermacentor andersoni* and each year some cases of Rocky Mountain spotted fever occur. Of course, if the person had a mild case of Rocky Mountain spotted fever, he would be immune to further attacks.

In Montana there are two diseases produced by the bite of an infected tick, spotted fever and tick paralysis. Also, there are often slow healing ulcers that give the patient a feeling of malaise, and sometimes fever.

There has never been any explanation as to why the ticks attack some persons more readily than others, but it is a fact.